

## REMEDIAL PROJECT MANAGERS' MEETING

NASA/JET PROPULSION LABORATORY

13 May 1998

## ATTENDEES:

Richard Atwater, Bookman-Edmonston Eng.

Charles L. Buri, JPL

Alex Carlos, RWQCB-LA

Mark Cutler, Foster Wheeler

Richard Gebert, DTSC

Vithal S. Hosangadi, Foster Wheeler

Stephen Niou, URS

Judith A. Novelly, JPL

B.G. Randolph, Foster Wheeler

Mark Ripperda, USA EPA

Peter Robles, Jr., NASA

Reported by: Louise K. Mizota, CSR 2818

ORIGINAL

Pasadena, California

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10:05 A.M.

BURIL: Why don't we do an introduction. I don't know if you know everybody, Richard. So we'll do a brief introduction around the table to make sure everybody is there.

I'll start. Chuck Buril, JPL project manager.

ROBLES: Peter Robles, NASA RPM manager.

GEBERT: Richard Gebert, DTSC project manager.

CARLOS: Alex Carlos, Regional Board.

RIPPERDA: I'm Mark Ripperda from the U.S. EPA.

ATWATER: Rich Atwater, with Bookman-Edmonston, representing the Raymond Basin Management Board.

CUTLER: Mark Cutler with Foster Wheeler.

HOSANGADI: Vitthal Hosangadi with Foster Wheeler.

RANDOLPH: B.G. Randolph, Foster Wheeler.

NOVELLY: Judy Novelly, JPL.

BURIL: And Stephen Niou, who just pulled up to the table here.

Okay. It's a fairly short agenda. We're going to share some things with you that we've been

1 doing on the RI for Operable Unit 1 and 3 and some  
2 fairly interesting stuff that Mark will go through  
3 with you.

4 Basically, on the status of the field  
5 work, B.G., why don't I ask you to give us a status  
6 of where you're at and what you've found so far, and  
7 so forth, and answer questions if any come up.

8 RANDOLPH: Well, we completed all the drilling.  
9 We have the SVE pilot test well in. It went in  
10 first. So far it's turning out to be extremely  
11 successful. Vitthal will give you the details on  
12 that in a little bit.

13 The other eight soil vapor wells have been  
14 placed.

15 No really -- no problem, so to speak. We  
16 did have a couple of surprises. We had some perched  
17 water in a couple of the areas. We didn't get as  
18 deeply as we wanted to go or get in a number of soil  
19 probes that we were planning on putting in. Other  
20 than that, things are going good.

21 We have the first round of sampling  
22 scheduled to start Monday morning. It will take us  
23 approximately two weeks to cover the new holes plus  
24 the old holes, the old four deep soil vapor wells  
25 that we put in last spring. Basically, that's it in

1 a nutshell.

2 BURIL: What have you found in terms of the  
3 field samples, B.G., as far as volatiles and the  
4 like? What have you seen?

5 RANDOLPH: It's similar to what we found last  
6 spring, but maybe to a lesser degree in severity  
7 from the FID readings that we got out of the core  
8 while it was still in the bag. And we do have a  
9 couple of areas where the FID readings were  
10 practically nothing, in 39 and 36, primarily, which  
11 are the northeast -- or excuse me, the northwest and  
12 southwest corners of the area that we covered.

13 BURIL: Okay. We're going to mix things a  
14 little bit. We talked about the new discovery at  
15 the vapor well west of MD-16. B.G. was the guy who  
16 actually found this so I'm going to ask him to  
17 explain what he found as part of the agenda. So,  
18 B.G., why don't you just touch on that briefly.

19 RANDOLPH: At the time that we were drilling  
20 that hole, which is located about 250 feet, plus or  
21 minus a few feet, west of MW-16 we had anticipated  
22 being somewhere in the neighborhood of 220 to 230  
23 feet deep, as I recall. Yes.

24 But we ran into water at 113 feet. And at  
25 the time the water level in MW-16 was such that it

1 was 233 feet below ground surface. Elevationwise  
2 between boring 36 and MW-16 is approximately four to  
3 five feet difference. We would have been higher.  
4 So we would have expected to run into water  
5 somewhere in the neighborhood of 220 to 230 feet,  
6 but we ran into it at 115.

7 ROBLES: That was due to what?

8 BURIL: That's the rub.

9 RANDOLPH: We're not sure. I've been able to  
10 sit back and think about it a little bit more since  
11 I've been out of the field. But we found the  
12 saturated zone. It is silty sand sitting on top of  
13 a relatively clean fine to coarse sand. The  
14 saturated zone was very moist at about 113. It was  
15 saturated from 113 1/2 to about 114 1/2.

16 And all of a sudden, bingo, water started  
17 rising on us and came all the way up to 98 feet.

18 Have no indication in the core that there  
19 was an aquiclude or a lens that was holding water,  
20 but all of a sudden we did get a saturated section  
21 at about 113 1/2 feet to 114 1/2 feet. At 114 1/2  
22 feet we went into the sand, which is just relatively  
23 moist. It certainly wasn't saturated.

24 But it quickly became saturated to a depth  
25 of 117 feet because the water filled up the hole to

1 within 98 feet of the surface.

2 That was the first hole that we completed  
3 after we put in the SVE pilot test hole. We didn't  
4 really have a feel for what we were seeing at the  
5 time, except that was one heck of a surprise.

6 Some of the other holes, when we got down  
7 to the groundwater level, the core would go from  
8 just barely moist, say, slightly moist to moist to  
9 saturated. And you could see the line in the core.  
10 You could have cut it with a knife. And of course,  
11 the amount of material would always be a little bit  
12 below that particular level because we had to get  
13 the core out of the ground in order to see it in the  
14 core. So we know we always had an open hole below  
15 that saturated zone. We'd go down and we'd touch it  
16 and the water would be at the bottom of the hole and  
17 would slowly come back up and would stabilize pretty  
18 much at exactly where we saw it in the core.  
19 Wouldn't go any higher.

20 In other words, what was happening, the  
21 way we can see it right now, is that groundwater was  
22 rising so fast during the last month prior to  
23 drilling, and while we were even drilling, that no  
24 capillary fringe was capable of being developed, it  
25 was rising so quickly.

1           So based upon what we saw in the other  
2 holes, seeing water come up above that saturated  
3 zone in boring 36 leads me to believe that it's  
4 perched water. I'm thinking more and more that it's  
5 perched water under a slight head, probably maybe  
6 upgradient, and water came up and stabilized. And  
7 it took about five hours for it to stabilize.

8           BURIL: That's one theory.

9           RANDOLPH: Yes, that's one theory.

10          BURIL: Mark, why don't you explain the other  
11 one we have been batting around.

12          CUTLER: The other one was actually B.G.'s other  
13 theory.

14          BURIL: Oh, okay.

15          CUTLER: Where B.G. drilled was very close to  
16 where the inferred trace of the fault, JPL thrust  
17 fault is. So the initial reaction was maybe B.G.  
18 was north of the fault and possibly a fault plane  
19 was acting as a barrier. Maybe the water, instead  
20 of being perched on silt, was perched on granitic  
21 rock.

22                 We don't really know which is which. We  
23 just know that the water is up there and it may be a  
24 moot point on what is holding it up there.

25          BURIL: Let's pass along to you, too, that we

1 sampled the water. Make no mistake about it, this  
2 was not what I'll call a good sample by the  
3 requirements laid down in the QAPP and the FSAPs and  
4 so forth. It was fairly turbid, if I remember  
5 correctly. But regardless of that, we did find some  
6 carbon tet in the water and we did find perchlorate.  
7 If memory serves, carbon tet was in the 40 parts per  
8 billion region, and perchlorate was up near 1200,  
9 wasn't it?

10 RANDOLPH: 1170.

11 BURIL: Very similar to what we see in Well 16.  
12 So it doesn't appear to be a great deal of  
13 difference.

14 Now, we've been kind of scratching our  
15 heads here wondering what we should be doing about  
16 this, if anything. And I've kind of come to a  
17 suggested understanding of this and I'll put it in  
18 front of you to see what you folks think.

19 Basically, it comes down to the  
20 recognition that this is not what I'll term a  
21 widespread phenomenon. We don't have a perched zone  
22 across the entire Laboratory or across any  
23 significant portion of it, because most of the rest  
24 of our borings don't show anything like this. So  
25 this appears to be a localized phenomenon.



1           Because of that, and because the  
2 concentrations in the water appear to be very  
3 similar to what we're dealing with in the main  
4 aquifer already, it's my thought that while we have  
5 an anomaly that may bear some review down the road,  
6 we don't have something that demands immediate  
7 attention in terms of a full-blown characterization  
8 effort in order to have this information understood  
9 and available in the RI. And that even if we don't  
10 have this information, the fact that this water is  
11 very localized and probably has some point of outlet  
12 down to the aquifer at some point in time, would  
13 give me reason to think that even if we didn't  
14 actively try to deal with this at some point in time  
15 we'll actually be able to remediate it just by  
16 having to drain off the confining area.

17           Of course, that's something that we might  
18 question down the road in terms of the economics  
19 because that's something that does tend to drag  
20 things out potentially and that may be more of a  
21 feasibility issue than it is a remedial  
22 investigation issue.

23           And so what my immediate thought was is  
24 that we recognize that this is here, that during the  
25 course of the feasibility study if we find that we

1 think we need to characterize this to a greater  
2 degree to understand what impact it may have on  
3 remediation here on the site, then that's the point  
4 in time to do it.

5 I'm reluctant to say that we need to  
6 revamp our approach on the RI portion of the work  
7 that we're going through right now simply because I  
8 think that the overall remedial strategy isn't going  
9 to change based on what we see right now.

10 Do you folks have a thought on that?

11 GEBERT: One question. Was the well put in at  
12 less of a depth, or was the hole abandoned refilled?

13 RANDOLPH: No, no. We completed it as a soil  
14 vapor well, but it's only got five probes in it.

15 GEBERT: And it's only down to what depth?

16 RANDOLPH: The lowest one is at 92.

17 GEBERT: 92. Okay.

18 BURIL: The hole below 92, B.G., is -- did you  
19 fill it in below that?

20 RANDOLPH: Yes. We had to to get rid of the  
21 water.

22 BURIL: Right. Okay.

23 GEBERT: All the other wells were put in at the  
24 depths that they were?

25 RANDOLPH: We went to groundwater on every one

1 of them. Yes, we did.

2 BURIL: Now, one of the wells also that we did  
3 find next to Building 122 we had a similar  
4 occurrence where we hit water higher than we had  
5 anticipated.

6 RANDOLPH: Right. We got into that at around  
7 128 feet and we had expected to go probably to a  
8 depth of 165, 170 based upon water levels that were  
9 in MW-8, down below Building 303.

10 BURIL: If you keep in mind the kind of terrain  
11 that we're in, the kind of geologic setting that  
12 we're in, it makes a fair amount of sense that we  
13 would see deposits, lenticular deposits of finer  
14 grained materials in a variety of places over time  
15 and that these may perch water in particularly wet  
16 times.

17 This year I think we've had, I'm going to  
18 say 34 or 36 inches of rain here at the Laboratory  
19 this year and we just added probably an inch and a  
20 half, two inches just in the last day.

21 So finding this kind of thing I don't  
22 think is entirely surprising. And we haven't seen  
23 it in the past, which leads me to believe that it's  
24 a transient kind of a phenomenon that ultimately,  
25 whatever we have that's perched up above, is going

1 to end up in the groundwater regardless. So that  
2 the overall remedial strategy wouldn't change as a  
3 result.

4 NIOU: But my concern is, first, seems this is  
5 north of the fault. So that if you -- later, if you  
6 conduct any groundwater remediation south of the  
7 fault, the impact to the north of the fault might be  
8 minimal because of the low permeability zone created  
9 by this fault. That's the first concern. Maybe.  
10 Because if on the two sides, groundwater level can  
11 have a difference over 100 feet. Therefore --

12 BURIL: Let me be sure I understand what you're  
13 saying, Stephen. You believe that this hole is on  
14 the north side of the fault as B.G. described it?

15 NIOU: Maybe. Because over 100 feet water level  
16 difference, there must be some hinderance for water  
17 to go through. Right? Such a short distance.

18 BURIL: Let me explain that where we know we  
19 have wells north of the fault is at our Building  
20 150. And that's our Space Simulator Building.

21 NIOU: Yeah.

22 BURIL: It has a basement that has a dewatering  
23 system in it. And it's mandatory that we run that  
24 dewatering system in order to keep the basement dry.

25 NIOU: True. True.

1 BURIL: The wells are put into bedrock at about  
2 35 feet. And water table is anywhere -- varies  
3 between 15 to 20 feet below grade at that elevation.

4 So it appears that anything that's really  
5 associated with north of the fault is really  
6 tremendously much shallower than what we're  
7 describing here. We're talking 10 to 20 feet below  
8 grade as opposed to over 100 feet below grade, which  
9 is what leads us to believe that we're still south  
10 of the fault, but that we have the geologic  
11 structures, stratigraphy that allows the water to  
12 perch.

13 NIOU: Even if it's not north of the fault but  
14 still we can see that there might be some hydraulic  
15 barrier there preventing, say, if you pumping at  
16 MW-16 to have some effect on this new location.  
17 That's the first thing.

18 Second thought is, once you suddenly find  
19 high perchlorate, and I would say that carbon tet,  
20 that's too high, because that's much lower than the  
21 MW-16 -- 13 and 7 area. But still, can we check the  
22 past history so that we may see there might be some  
23 source in that area so we can better understand it,  
24 without suddenly pumping so much money in RI, have  
25 better understanding of that so that at least in the

1 future when we report it to the public this is what  
2 we did, then we can have a full-blown story we can  
3 tell that, see, we did this, we did that. Look at  
4 the history to see.

5 Because seems that there will be a new  
6 source out there. I don't know. I'm just --

7 BURIL: Well, I don't know that we're dealing  
8 with a new source. We had one identified area in  
9 that general vicinity. What did we call it? WP --  
10 what was it?

11 RANDOLPH: 3.

12 BURIL: 3. Okay. We identified that. And, in  
13 fact, we placed Well 16 with the idea of being able  
14 to understand what impacts we might have from that.  
15 We didn't know exactly where it was. We had kind of  
16 a general idea it was around this location. And  
17 so --

18 RANDOLPH: That was boring 8. Up the hill.

19 BURIL: Good. Thank you.

20 So we placed a boring and we also had a  
21 well to be able to understand what we're dealing  
22 with in terms of groundwater. And boring 8, as I  
23 recall, didn't show us a whole heck of a lot, did  
24 it?

25 RANDOLPH: No, it did not.

1 BURIL: 16 is anomalously high in terms of  
2 solvents and that's one of the reasons we're doing  
3 the soil vapor around the area to see what impact  
4 that has. The perchlorate is something that is  
5 highest in that particular well. The fact that it  
6 matches --

7 NIOU: 16.

8 BURIL: -- 16 matches the same levels that we're  
9 seeing at this perched water location, I don't know  
10 if that's serendipitous. I don't know if that's -- I  
11 don't know what it is.

12 But overall, again, looking at the idea  
13 that it's what I'll term a relatively localized  
14 phenomenon here on the Laboratory, that the need for  
15 special characterization or remediation as a source  
16 I think is probably premature at least at this  
17 point.

18 I don't want to impact the schedule that  
19 we currently have for something that isn't something  
20 that we can identify distinctly as a much higher  
21 concentration, much higher concern in terms of  
22 contamination of the groundwater underlying this  
23 particular location. It's about -- I mean, it's  
24 essentially the same. And because of that, I think  
25 that treating it essentially the same is, at least

1 at this point in time, justified.

2 Do you see my logic on that?

3 CARLOS: The VOC levels you find in MW-6 and  
4 your water sample you took from hole 36, are they  
5 more or less the same?

6 BURIL: The 6 is generally nondetect.

7 CUTLER: Are you referring to 16?

8 CARLOS: 16.

9 NIOU: 16, yeah.

10 BURIL: Oh, 16. Yeah. They're very similar in  
11 concentration. Very similar. In fact, if I  
12 remember correctly, our latest on 16 was, what,  
13 1100, 1200?

14 CUTLER: Right around there. Right.

15 BURIL: That's what we're seeing, 1170 in the  
16 perched area in boring 36.

17 RANDOLPH: That was perchlorate.

18 BURIL: Right. Perchlorate.

19 NIOU: Is there a cheaper way to prove that's a  
20 perched aquifer instead of drilling holes?

21 BURIL: I'm up for hearing a suggestion. We  
22 talked about ground-penetrating radar as a  
23 potential. And all my geologists kind of turned  
24 their nose up at that and said not in these kind of  
25 conditions. There's just too many boulders, too



1 much fill, too many other things that are going to  
2 be in the way of that.

3 ROBLES: Too much water.

4 GEBERT: So is there a way to test if there is  
5 perched up there?

6 BURIL: You're talking about drilling.

7 RIPPERDA: If it's perched from rain water, it  
8 might be different than the stuff that's --

9 BURIL: I don't know if we have enough sample to  
10 do any chemistry work on it.

11 NIOU: I do know U.S.G.S. has a seismic  
12 technology that they detect the saturated -- the top  
13 of groundwater, meaning use seismic technology.  
14 They can detect the saturation of your soil, and  
15 even the rock surface, they can detect that. But  
16 with so many buildings, with so many roads, I don't  
17 know. If you're interested, I can give you the  
18 person's name and phone number and you may contact  
19 him.

20 BURIL: It would be worth at least talking to  
21 him. But I think one of the things I want to point  
22 out what we're talking about that kind of technique  
23 is some of the cores that B.G. was pulling out of  
24 the ground, we've got one in Judy's office. It's  
25 solid rock. It's about that long and about that big

1 around. We have several like this. So there are  
2 quite a few boulders in all of this. If this is  
3 some form of seismic technique, I don't know to what  
4 degree that's going to be successful in this kind of  
5 condition.

6 RIPPERDA: If it shows enough groundwater, you  
7 already know where that is. Something like a deep  
8 resistivity. I don't know if it's that worthwhile  
9 just right off the top, whether it's perched or not.  
10 If the concentration levels are about the same and  
11 if there's a potential source right above it, then  
12 that's just a potential source like all the other  
13 potential sources and it's not like you've got a  
14 DNAPL there or perchlorate orders of magnitude  
15 higher than your other perchlorate levels.

16 So I think I kind of agree with you that  
17 it's not really worth pursuing separately. But if  
18 you did, I think maybe a deep resistivity might be  
19 able to show a perched over unsaturated.

20 BURIL: Are you guys familiar with that  
21 technique?

22 CUTLER: From the surface?

23 CARLOS: You still have to drill.

24 NIOU: The seismic you don't have to. It's only  
25 on the surface.

1 CUTLER: We did look into seismic several years  
2 ago, actually, to try to find the fault and what  
3 basically it was in some of these areas and had a  
4 lot of people look at it. And with all the  
5 underground utilities, the boulders Chuck was  
6 talking about, you just can't get the energy down  
7 there. And there's not real defined pathways, other  
8 than maybe a basement.

9 So we don't think it will do much good,  
10 seismic.

11 BURIL: I think Mark's idea, at least to look at  
12 it in the future if we need to, for whatever reason  
13 we think we need to characterize this down the road  
14 I think is worthwhile to check out, although I think  
15 you're right, you still would have to drill. If we  
16 decide that this is important enough to really chase  
17 after, then I don't think that we'd have a problem  
18 with drilling to deal with the issue. I don't think  
19 that we have an issue that demands immediate  
20 attention in order to actually cause schedule  
21 changes and things like that.

22 RIPPERDA: Was that the northernmost soil vapor?

23 BURIL: I think it was, wasn't it, B.G.? 36?

24 RANDOLPH: Yes. The one up there in the upper  
25 left-hand corner.

1       ROBLES: Do we want to table this until we get  
2 more information?

3       BURIL: I'm not sure what more information we  
4 need. I guess that's one of the things.

5       RIPPERDA: You're not collecting any more  
6 information.

7       ROBLES: You know, from looking at the other  
8 sites, you may come back and say maybe we can at  
9 least look at this.

10       BURIL: What I would suggest is that as we go  
11 through the process of developing the RI and as we  
12 go through the process of understanding how we want  
13 to try and deal with remedial issues for the OU-1  
14 area, that in the course of that evaluation if we  
15 find that this apparent perch zone is significant  
16 enough for us to be concerned with for whatever  
17 reason, I don't know what that would be at this  
18 point because I don't think it is personally, but if  
19 we did then, we could address it then. It's not  
20 going anywhere.

21       GEBERT: For me, I agree with Chuck. I don't  
22 think it's worth the effort to try to identify it  
23 now. If you had different contaminants, then I'd be  
24 much more hesitant to pass it off to the future.  
25 But I don't see at least putting any more work into

1 it at this time.

2 RIPPERDA: I agree with that.

3 GEBERT: Of course be aware that  
4 (UNINTELLIGIBLE) get it if the system FS type of  
5 study.

6 BURIL: Okay. Good.

7 RIPPERDA: If you do want to invest, probably  
8 the most straightforward thing is probably wait nine  
9 months until October.

10 BURIL: After we've had some drying out.

11 RIPPERDA: After we've had some drying out and  
12 step a few hundred feet north and drill another  
13 well.

14 BURIL: Yes, that makes sense.

15 RIPPERDA: It's cheaper than trying to figure  
16 out, test out resistivity or seismic or something  
17 else.

18 BURIL: That makes sense.

19 GEBERT: The big picture is not going to change.

20 BURIL: That's what my thought is, too. With  
21 this localized phenomenon we aren't really going to  
22 change the overall concern that we're dealing with,  
23 the overall approach.

24 RANDOLPH: I might just emphasize the rapidity  
25 of the way the groundwater levels were changing in

1 the MW-16 area. While we were drilling up there, it  
2 rose slightly over 10 feet in 19 days.

3 BURIL: It's wet.

4 RANDOLPH: We're adding water up there  
5 considerably. In January the depth to water was  
6 around 274 feet. At the time that we were up there  
7 at the end of March, on March 31st, as a matter of  
8 fact, it was at 233.

9 BURIL: That's to be expected, given the El Nino  
10 conditions that we're facing. Given the conditions  
11 we see today, it's not surprising we're going to see  
12 some pretty dynamic changes. Okay.

13 Well, then, we'll table that particular  
14 topic until something else comes along to make us  
15 want to rekindle our interest.

16 Mark, do you want to go through some of  
17 the stuff that you have on the groundwater that you  
18 showed me this morning?

19 CUTLER: Okay.

20 BURIL: I think that would be really beneficial  
21 and help folks kind of understand some of the  
22 analysis we have.

23 CUTLER: Okay.

24 Maybe, since you're closer, do you want to  
25 give maybe a quick conceptual site model of our

1 layering? Or do you want me to?

2 BURIL: You're a better drawer, but I'll  
3 attempt. Let's see if I can make a stab at it.

4 This is, again, very conceptual, not meant  
5 to indicate actual positions or thicknesses or  
6 anything else.

7 Basically, to start it off before Mark  
8 kicks in, we're thinking now we've got what we could  
9 consider a three-layer system. This being ground  
10 surface, we have water table here. I always forget.  
11 Is that the right way to draw that triangle?

12 CUTLER: Yes. Upside down.

13 BURIL: We apparently have a lot of our  
14 contaminant issues here in the first layer. And the  
15 second layer seems to get some contamination drawn  
16 into it from some of the things that Mark will show  
17 you. And the third layer even has a greater  
18 contaminant drawdown issue potentially.

19 And before I go any further I'm going to  
20 let Mark explain that to you.

21 CUTLER: Right. The basic conceptual model is  
22 these three layers -- well, it started when the  
23 regulators asked us to divide the aquifer up to  
24 present data. And you've seen our quarterly reports  
25 by layer. The aquifer layers, we tried to base the

1 layers on something real, you know, something  
2 geological or hydrogeological. So the layers were  
3 basically to find -- I didn't bring the  
4 cross-sections. I left them down on your desk.  
5 They're basically to find, besides correlation of  
6 electric log character, by, if you will, amount of  
7 drawdown from pumping on nearby production wells.  
8 We found a real --

9           Here is a good example. Well 3. When  
10 these wells are on, you can almost squint your eyes,  
11 but we have three layers. The upper screen is in  
12 layer 1. These two screens are in layer 2 and these  
13 two screens are in layer 3. And you can see that.  
14 I think Well 19 is probably our type log, layer 1,  
15 layer 2, layer 3. These two screens behave  
16 hydraulically similar; these two similar. The basic  
17 idea.

18           So somewhere between screen 3 and screen 4  
19 there's a silt-rich layer you can see on the  
20 electric logs. And we said, okay, that silt-rich  
21 layer is important because it is separating these  
22 two screens from these screens. And we ran these  
23 correlations all across the site and it's fairly  
24 consistent. There's a few areas where it's alluvial  
25 fan. So things dip a little bit. And we divided



1 the aquifer up.

2           These silt-rich layers that Chuck has  
3 drawn there are real predominant over on the eastern  
4 part of the site and basically die out by the time  
5 you get to Well 22. So Well 14 and Well 21, there's  
6 basically just a big pile of sand.

7           Does that kind of set the stage?

8           RIPPERDA: How do 14 and 21 look on that?

9           CUTLER: Good question. 14, all five screens,  
10 it behaves like one giant, unconfined aquifer. All  
11 five screens are basically the same water level.  
12 The same with Well 21. All five screens, it's just  
13 one giant, unconfined aquifer.

14           When you get farther off site, when these  
15 wells are pumping, you get semiconfined conditions.  
16 You can see when they turn the wells off, boom,  
17 everything jumps back up to basically a Well 14 or a  
18 Well 21 scenario. So during pumping we get that  
19 semiconfined.

20           So what we did is, we're trying to, in the  
21 RI, approach the hydrogeological section of the RI  
22 based on aquifer layers, address each layer  
23 individually because you'll see they do behave a  
24 little different. And the same with the nature and  
25 extent of contamination. We'll do it by aquifer

1 layer.

2 ATWATER: So you're thinking about three layers  
3 now?

4 CUTLER: Three layers.

5 ATWATER: I didn't sit in all the meetings last  
6 November or December, but I thought when you were  
7 working with Elizabeth Erickson and Tom Regan in our  
8 office, we agreed at that time on a two-layer kind  
9 of --

10 CUTLER: Right. Two layer, it was more to get  
11 more of a general feel to get our more complicated  
12 model, more layers into the MWD.

13 ATWATER: That was the five-layer, your on-site  
14 model.

15 CUTLER: That one layer. And it was basically  
16 this right here. We decided that this silt-rich  
17 interval that separated these two screens from these  
18 screens was a more significant impact on the aquifer  
19 than this silt-rich interval, if that makes sense.  
20 So we kind of combined the two and said right here  
21 is the layer.

22 ATWATER: Okay.

23 CUTLER: So for those purposes, we have the two  
24 layers. For our purposes we are sticking with the  
25 original screen.

1           Just as a caveat, over here, Well 20, the  
2 bottom screen in Well 20 we're calling aquifer layer  
3 4. It's farthest east. It's very, very deep. That  
4 one aquifer layer or one screen is so far away from  
5 the site and that screen is so deep and it's so  
6 protected by silt layers that its piezometric  
7 surface is just like the upper layer.

8           I mean if you look at Well 20, it's really  
9 screens 1, 2 and 5, then 3 and 4. So that screen is  
10 so protected, it's so unique, it's so deep, if you  
11 look at the cross-sections, it's 900-some feet deep.  
12 We gave it a whole other aquifer layer. So there's  
13 one screen in aquifer layer 4.

14         BURIL: It's furthest away and the deepest one  
15 we have, so it really isn't going to be part of the  
16 analysis overall.

17         CUTLER: Right. No effect by pumping  
18 whatsoever.

19         ATWATER: What kind of water quality data do you  
20 get for that level? Screen anything?

21         BURIL: We haven't seen any contaminants on  
22 that.

23         CUTLER: There's none. Well 20 is really a  
24 pretty clean well.

25                To try to speed this up, we've gone

1 through and tried to make water table maps or  
2 hydraulic head maps for each aquifer layer during  
3 different scenarios: Where there's no pumping, the  
4 City of Pasadena wells are pumping, when all the  
5 wells are pumping. You can see we have data for  
6 several years and it's still very hard to find at  
7 one period of time the various scenarios. Everybody  
8 is usually on at the same time and off at the same  
9 time. So we picked a time way back here in December  
10 of '95 when only the City of Pasadena wells were on.  
11 There's a time here in February '96 when nobody was  
12 pumping. There's a time here in September '96 where  
13 everybody was pumping. Then way out here at the end  
14 only the Lincoln Avenue wells were pumping. But  
15 this is this year's El Nino and that's so messed up  
16 it's not really -- we may drop that scenario because  
17 Lincoln Avenue didn't really seem to have much  
18 effect.

19 BURIL: Show them how you came to that  
20 conclusion, Mark. I think that's beneficial.

21 CUTLER: On these hydrographs -- Well 17 is  
22 right next to Lincoln Avenue Well Number 3. So we  
23 looked at the hydrographs for Well 17. This is all  
24 the different pumping schedules for the various, or  
25 actually the amount of water they withdrew for

1 various months. We tried to look here and find out  
2 what happened when everybody else is on but this  
3 Lincoln Avenue 3 shut down. What happened to the  
4 hydrographs? Well, not much happened.

5 RIPPERDA: Each of these is a different  
6 production well?

7 CUTLER: They're grouped. This is the City of  
8 Pasadena wells. These are the two Lincoln Avenue  
9 wells. Here is the Rubio and Los Flores wells.  
10 These are the wells down here. And these are the La  
11 Canada and Valley. So we split it up, kind of.

12 RIPPERDA: Okay.

13 CUTLER: So we spent a lot of time looking at  
14 these and tried to find times where everything was  
15 consistent and only one thing happened and see what  
16 it did to Well 17.

17 To make a long story short, this Lincoln  
18 well really doesn't have much of an areal effect on  
19 pumping. We have a monitoring well right next door  
20 with five screens and we see very little change.

21 Here the wells went off in June. No real  
22 change. In fact, it was still being drawn down.  
23 Maybe the rate of draw-down wasn't quite as deep as  
24 it was before. When the City of Pasadena wells go  
25 on and off, we see tremendous changes. So they're

1 by far the --

2 RIPPERDA: Where is Lincoln Avenue number 3  
3 completed depthwise compared to Pasadena wells and  
4 MW-17?

5 CUTLER: I wish I had those cross-sections. It  
6 goes into --

7 BURIL: It kind of spans all of them. Isn't  
8 Lincoln Avenue 3 screened shallower than Arroyo and  
9 so forth?

10 CUTLER: Right. But it does straddle our  
11 aquifer layers 2 and 3, the Lincoln Avenue well. So  
12 that does play a part.

13 RIPPERDA: Does it pump in solely from that, or  
14 is it also screened shallower?

15 CUTLER: Solely from that. I think it's just  
16 one giant screened interval. It goes right between  
17 our aquifer levels. And their pump, I believe, is  
18 actually in aquifer layer 2. But I mean, this is  
19 all the screens. When you look at all of them,  
20 whether it's screen 1, 2, 3 or 4, we don't see any  
21 change.

22 BURIL: I think it's interesting to point out,  
23 too, Mark has a lot of the drawings here I think  
24 will help illustrate this. But one of the things  
25 that we've seen continuously now for about six plus

1 months is that the wells from the City of Pasadena  
2 have had a continuing increase in perchlorate  
3 concentrations up to the point they shut them down.  
4 The Arroyo well started off at below 18 and  
5 ultimately went up to, I want to say it's like up  
6 over to 140. And it's been there now -- they don't  
7 run it at all. They only run it to test to see what  
8 it's at. Their Well 52, which is the next one  
9 south, showed an increase in concentrations for, I  
10 think the last number I got was that it's in the mid  
11 40s now. The Ventura and Windsor wells are still  
12 relatively clean.

13               So they apparently do have some influence  
14 in drawing something off of the site or catching the  
15 regional flow, whatever mechanism is bringing it to  
16 them. But yet Lincoln Avenue well number 3 has been  
17 consistently below 18.

18           ATWATER: The last couple samples in April, and  
19 they're running it now, it's -- I got the results.  
20 It's ND 4 or 5.

21           BURIL: No kidding. ND. Wow.

22           CARLOS: What kind of perchlorate numbers?

23           ATWATER: I'll give you all this data if you  
24 want.

25           BURIL: That would be great, Richard.

1       ATWATER: Yes, that was one thing I was going to  
2 say on the January-February modeling report, it  
3 would be nice, you just report perchlorate data in  
4 layer 1. And you ought to take the production  
5 wells, because we've got all that sampling data for  
6 January and February. We might as well display all  
7 of the Pasadena, Valley.

8       BURIL: That would be great.

9       CUTLER: That's what we want to do for the RI.

10       ROBLES: Lincoln Avenue they won't give it to  
11 us.

12       CUTLER: We've been trying to get this data for  
13 months and months.

14       BURIL: We've had some problem.

15       ATWATER: Really? I got some correspondence  
16 where he sent you over the data.

17       BURIL: From Lincoln Avenue?

18       ATWATER: Yes.

19       BURIL: From when?

20       ATWATER: Well, I'll double check. But the memo  
21 I had here, he's got all the production wells --

22       BURIL: What's the date on that?

23       ATWATER: Here. I'll show you the memo. I'll  
24 pull that stuff.

25       BURIL: That would be really helpful.



1       ATWATER: I told you, I went over yesterday and  
2 went over this stuff and he said he'd already sent  
3 you over this stuff. He said he sent you over --

4       BURIL: He sent us a lot of the pumping  
5 information, I know that. I don't recall seeing  
6 water quality information.

7       ATWATER: It's all electronic. DHS has all of  
8 it. It all goes in automatically.

9       BURIL: I know.

10       ATWATER: That's all accessible.

11       ROBLES: See, we went to Lincoln Avenue  
12 personally and asked them and they declined because  
13 they're still in negotiations.

14       NIOU: I personally asked Ron several times and  
15 he asked me to go through DHS. Same thing.

16       ATWATER: That's just because he has all the  
17 paper files. But I'll get you the data. But it's  
18 all electronic.

19       CUTLER: It's like June '94 to March '98?

20       ATWATER: We don't have perchlorate data  
21 since then.

22       BURIL: Do you have electronic access or do you  
23 have to have DHS withdraw it for you?

24       ATWATER: Most of the labs send electronically  
25 to DHS.

1 BURIL: But do you have access to it  
2 electronically, or do you have to request it from  
3 DHS?

4 ATWATER: I don't have it in my files. I'll  
5 check over at Ron's office.

6 BURIL: Because some people, I don't know how  
7 they get it, but they have direct electronic access,  
8 read only, to the DHS files. We're not one of them  
9 and I don't know how to get it.

10 ATWATER: We'll figure out the logistics. But  
11 it just seems like it would be a good idea to show  
12 all the -- for the same time period, show the  
13 recorded production well water quality data.

14 CUTLER: That's our intent. And these maps here  
15 don't have that on there until this map here. We go  
16 around Well 17, but we stop at Lincoln Avenue. If  
17 we had that data, we would be able to --

18 ATWATER: Tom put that together. We put them in  
19 the January and February.

20 CUTLER: Perfect. This is what  
21 (UNINTELLIGIBLE) --

22 BURIL: I think one of the things, though,  
23 that's interesting in Rich's data and really  
24 supports this is that there is apparently, for  
25 whatever hydrogeologic reason, very little influence

1 off of Lincoln Avenue's Well 13 on --

2 ATWATER: Well 3.

3 BURIL: Excuse me. 3. -- on contaminant  
4 transport and ultimate fate into that well. It  
5 doesn't appear to be a great deal of influence.

6 ROBLES: And on the Pasadena wells.

7 BURIL: There's a tremendous influence. And  
8 we've seen that borne out by the data.

9 ATWATER: Exactly. I brought all the pumping  
10 record data. But your scenarios on here are pretty  
11 good. The only question I had is, I'm pretty sure  
12 the Arroyo well will stay off this summer. But the  
13 rest of them, like the Lincoln, Valley wells will  
14 stay on just like last summer.

15 CUTLER: That's why we picked over here. We're  
16 back here in '96 because of that.

17 ATWATER: I think Rubio, I got the pump -- I  
18 think that will stay on. That's an anomaly for  
19 June. I think they had some problem there. But  
20 they'll keep it on steady. And then on the Lincoln  
21 wells they're going to do the same thing, they'll be  
22 on. Particularly that one, they're showing  
23 non-detect, they're going to keep them on, both of  
24 them.

25 BURIL: Non-detect. That's amazing.

1       ATWATER: 3 and 5 will stay on. The only  
2 questions, we need to talk to Pasadena, because what  
3 they're doing, I'm not 100 percent sure. But --

4       BURIL: Who is Pat? What was the name?

5       ATWATER: I'm sorry? What?

6       BURIL: The Pasadena? I mean, I'm --

7       ATWATER: Pasadena.

8       BURIL: I'm sorry. Never mind. I misheard you.

9       ATWATER: We'll talk to Brad. Elizabeth is out  
10 for the next couple of months.

11       BURIL: Oh, really.

12       ATWATER: She's taking a leave. She's adopting  
13 a baby. But Brad or one of the other staff people.  
14 I think this is reasonable, but I think the  
15 assumption that the Arroyo well is going to stay off  
16 also is probably true.

17       BURIL: That makes sense. I don't know what  
18 else they'd do with it. They shut it down, so --

19       ATWATER: Some of these pilot ideas that we  
20 talked about. That won't be very much.

21       BURIL: Mark, do you want to go through some of  
22 the layers of the data that you have there so  
23 everybody has a feel?

24       CUTLER: Briefly, we see some real differences  
25 in layers 2 and 3. They're little dabbles. This is

1 a no-pumping scenario for layer 2. As you can see,  
2 flow is pretty consistent to this direction and very  
3 low. These are 10-foot contours, very low gradient.  
4 So when the pumps are off, you'll see some of these  
5 maps down in layer 2, things are getting drawn off  
6 site into layer 2. When the pumps are off, flow  
7 velocity is very low. It's not really going very  
8 far past these wells. This is only when the Lincoln  
9 Avenue is pumping. There again, very, very minor,  
10 if any, area of influence.

11 This is where the City of Pasadena wells  
12 are pumping. Now, these guys have a tremendous  
13 amount of influence. When these wells were off,  
14 I'll just refresh your memory, for several years  
15 back when they were building the treatment plant  
16 when they first discovered the contamination,  
17 everything was in static conditions. We had  
18 transducers and took water level measurements around  
19 the site. When they turned these pumps on, our well  
20 MW-6 clear across the site our, wells dropped 10  
21 feet. Tremendous area of influence. You can see  
22 that in layer 2 as well. Well 18 gets affected.  
23 Well 20, there's some effect, not a whole lot.

24 When all the wells are pumping, it appears  
25 that Rubio Canyon and Los Flores has a little more

1 pull on Well 20 than the Pasadena wells. They both  
2 affect Well 20. So this area of cone of influence  
3 probably migrates back and forth depending on who is  
4 on and who is off and what period of time you  
5 contour.

6 BURIL: I think one of the things I'd like to  
7 point out, though, if you just leave that one there,  
8 Mark, is that the area of influence downgradient  
9 from the Pasadena wells appears to be fairly large.

10 Mark, you were indicating to me this  
11 morning that in static conditions the velocities in  
12 layers 2 and 3 are fairly small.

13 CUTLER: Very, very low. Very low gradients.

14 BURIL: And so that well pumping from Pasadena  
15 actually has some benefit because with a slow  
16 movement in static conditions and a large influence,  
17 particularly downgradient under a dynamic influence,  
18 we're actually drawing stuff back that's gotten by,  
19 which I think is one of the reasons why we don't see  
20 anything in Rubio Canyon, Los Flores or Well 20.

21 ATWATER: So what you're saying is based upon  
22 this data, if you could keep all four Pasadena wells  
23 on, pump and treat, you could --

24 ROBLES: Control.

25 CUTLER: Or even if you shut them down for even

1 probably two to three or four months, this gradient  
2 is so low, then you turn them back on -- even if  
3 contaminants, say, got this far and you turned them  
4 back on --

5 ATWATER: So you don't have to leave them on all  
6 the time, do you?

7 BURIL: Right. You can still deal with a pump  
8 schedule that they currently have. And the amount  
9 of material that would appear to get by is captured  
10 again and ultimately treated. So it's an  
11 interesting scenario.

12 ATWATER: The only question is this huge wet  
13 year we're having, are you going to create this big  
14 mound and have a steeper gradient because of wet  
15 conditions?

16 CUTLER: Yes. Well, we did a water level map.  
17 We started sampling in April. That's really when  
18 water levels are kind of starting to really hit the  
19 water table where all this rain is getting down to  
20 the water table. Our Well 21 is higher than most.  
21 And so we -- all this ponded water that's been out  
22 here is probably creating a mound out here. And the  
23 groundwater is going back this way on top of things.

24 But to get back to how these different  
25 layers behave, the upper layer, or the second layer

1 is kind of protected by the silt-rich interval. So  
2 all this mounding and all the recharge, that's what  
3 kind of all the action is. And the second layer is  
4 kind of protected from that. We see some indication  
5 of some slight mounding in the second layer, but  
6 very slow, not enough to reverse any type of flow  
7 direction, where on site in the upper layer we see  
8 the flow reversals. In the second layer we don't  
9 see any flow reversal at all.

10 BURIL: So then based on that, it sounds like  
11 the really dynamic changes that are imposed by  
12 percolation, and so forth, are limited in large part  
13 to the first layer. And so what happens in the  
14 second layer is probably more influenced by pumping,  
15 and so forth, than any mounding and so on.

16 So while we may see some change in the  
17 groundwater gradients, they aren't going to be  
18 nearly as pronounced in the second layer as they  
19 would be in the first. And, in fact, that does us a  
20 lot of good from the standpoint that in the first  
21 layer, when we have a great deal of percolation from  
22 the spreading basins in the Arroyo and so forth, we  
23 actually generate that groundwater flow reversal  
24 which stops the migration off site and actually  
25 holds it on site, which may explain why we don't see



1 a great deal of contamination further downgradient  
2 in our off-site monitoring wells.

3 CUTLER: Those are really low. I'll go through  
4 this really quick. I just want to point out one  
5 other thing. Between layer 2, say this is all wells  
6 pumping, and layer 3 all wells pumping, the  
7 contouring level -- forgive this. This is all hand  
8 done. This is getting to the point where -- these  
9 are all 10-foot intervals, contouring intervals, 10  
10 feet. You can see the tremendous amount of drawdown  
11 and probably pressure head, not elevation head, in  
12 the lower aquifer. It behaves much more confined  
13 than the second layer. They're both probably  
14 semiconfined, but it's, if you will, a little more  
15 semiconfined.

16 You can probably tell by looking at the  
17 hydrographs. This third layer really gets drawn  
18 down. When the pumps are on, it really gets drawn  
19 down as far as the pressure head. And that's  
20 reflected in the contours.

21 RIPPERDA: What are the pumping rates of the  
22 Pasadena wells compared to Lincoln Avenue number 3?

23 BURIL: It varies.

24 CUTLER: It varies. But Lincoln 3, as I recall,  
25 on the table we have, I guess we may not have the

1 complete information, it was about 900 gallons a  
2 minute. And the City of Pasadena are upwards of  
3 around 1700 gallons a minute. Maybe twice as much.  
4 Each well. So you multiply that by --

5 RIPPERDA: Right. So part of what you're saying  
6 about communication and such on like Well 17, part  
7 of it is geologic, but a big part of that -- each  
8 Pasadena well pumps twice as much and both Pasadena  
9 wells are on --

10 CUTLER: It's like 8 to 10 times as much.

11 ROBLES: It's a factor of 10 to 1.

12 CUTLER: Exactly.

13 ROBLES: We've seen, correct me, Mark, but we've  
14 seen on our most western well when Pasadena is on --

15 CUTLER: Well 6. Well 14 and 21 is kind of  
16 interesting. They seem to be -- well, this is  
17 really a detailed thing. If you look carefully, if  
18 we blew this up, you would see some separation of  
19 the screens. We're talking maybe a foot or two feet  
20 from over a 500-foot difference in elevation. That  
21 seems to match the pumping schedules of the Valley  
22 wells closer than the City of Pasadena wells.

23 ROBLES: Do we see any influence from the  
24 Pasadena wells on the water levels?

25 CUTLER: Right. Definitely.

1 ROBLES: So all the way to our westernmost --

2 BURIL: Yes. Tremendous influence there.

3 RIPPERDA: The various scenarios like no pumping  
4 or maybe everything pumping, what kind of groundwater  
5 velocities are you talking about?

6 CUTLER: I haven't really calculated that.  
7 That's one of the next things we're going to be  
8 doing. Awfully hard for me to guess.

9 BURIL: But based on the gradient that we're  
10 seeing --

11 CUTLER: Should be fairly low, particularly in  
12 the bottom two layers.

13 ATWATER: Speaking from an annual standpoint,  
14 the Lincoln Avenue wells pump about 1,000 acre-feet  
15 per year. And we concentrate it all in the summer  
16 months. And Pasadena is about 7500.

17 BURIL: A factor of 8 sounds like it's right on.

18 ATWATER: Yeah, it is. That's exactly what they  
19 did in '96, '97.

20 RIPPERDA: That pumps 1,000, or is it 3 and 5  
21 together?

22 BURIL: They've only pumped out of 3 now the  
23 last several years, haven't they, Rich?

24 ATWATER: Yes. (UNINTELLIGIBLE)

25 CUTLER: But the main point is, I think without

1 the pumping, if everything just flowed naturally, we  
2 probably wouldn't see contaminants in layers 2 and  
3 3. It's probably these city wells that have drawn  
4 it down into these lower layers. I mean, they  
5 control the pathways here.

6 BURIL: Okay. Anybody have any questions on  
7 that?

8 I found that to be kind of an enlightening  
9 bit of work that Mark did from the standpoint of  
10 seeing, at least on the conceptual level, how  
11 contaminants are getting down deep and the kinds of  
12 scenarios that we can actually envision maybe being  
13 utilized in a remedial action, particularly if we're  
14 able to identify that the zones of influence of the  
15 Pasadena wells are sufficiently large that even  
16 after they've been shut off for a time and then  
17 restarted, that we don't have significant migration  
18 occurring beyond their zone of influence.

19 Conceptually this makes a great deal of  
20 good news for me from the standpoint that we may be  
21 able to help utilize that situation to our benefit  
22 over a remedial action. That's something we're  
23 going to have to figure out, of course. But I mean  
24 conceptually, at least, it looks like it has some  
25 possibility. That makes the assumption we find the

1 perchlorate treatment, of course.

2       RIPPERDA: I know perchlorate is really  
3 conservative, but any idea, just throwing out some  
4 ideas, could you pump some of the Pasadena wells  
5 that are high in perchlorate and just send them to  
6 the spreading basin and let them just filter back in  
7 so there's a little bit of loss to the aquifer from  
8 evaporation and stuff?

9       BURIL: It would be very small.

10       RIPPERDA: But just have 200 feet of soil act as  
11 a filter? How conservative is perchlorate?

12       BURIL: It's very conservative. It basically  
13 stays with the water.

14       ATWATER: It acts just like a salt  
15 (UNINTELLIGIBLE)

16       BURIL: It's basically an ionic solution of  
17 perchlorate. It's exceptionally dilute. What  
18 didn't percolate through with the water would be  
19 waiting there for the next time they spread water  
20 and carried it on back down. You'd just end up with  
21 a cycle like this. That could take years. If we  
22 actually introduced perchlorate into the top layer  
23 and got it into the soil it would take years to  
24 flush back out again. If it was something that  
25 actually bound in the soil and didn't go anywhere, I

1 think that would be a great idea.

2 CUTLER: (UNINTELLIGIBLE) spreading it around.

3 ATWATER: It works well with nitrate when you do  
4 -- for example, if you spread reclaimed water, like  
5 in the San Gabriel River or the Santa Ana, you get  
6 all the biological activity and that sort of thing,  
7 bugs, and you don't see nitrates below. But we'll  
8 have to get some designer bugs for perchlorate for  
9 that. It's not a bad idea.

10 BURIL: Yeah, actually.

11 ATWATER: That's all of the work done on --  
12 using waste water for spreading. U.S.G.S. did a lot  
13 of work on the San Gabriel River (UNINTELLIGIBLE)  
14 increased nitrate in the wells downstream and that  
15 sort of thing.

16 BURIL: It has potential, at least something we  
17 could keep in the back of our minds. If we do find,  
18 quote-unquote, designer bugs, we might be able to  
19 actually utilize them. Okay.

20 Mark, do you have anything else you want  
21 to add on that?

22 CUTLER: That's basically the approach we're  
23 taking.

24 BURIL: Any questions? Anything further on that  
25 one?

1           I want to have Vitthal take a few minutes  
2 and tell us about the soil vapor extraction work  
3 that he did.

4           HOSANGADI: Basically, we finished the first  
5 part of the test where we were testing each screen  
6 for four days of the week. So basically, we  
7 finished screen A, screen B, screen C. Those were  
8 for the first three weeks the best. And then the  
9 fourth week of the test we tested all three screens  
10 running at the same time.

11           Basically, what we did for each week, the  
12 first day of the week we ran it at 100 percent  
13 vacuum. So, for example, if we were running screen  
14 A, it was in week one, then the first day we ran 100  
15 percent vacuum and measured the flow rate, measured  
16 the concentration, looked at the responses. Then we  
17 went to 75, 50 and 25 percent.

18           Basically what we've seen so far is that  
19 all three screens showed a pretty good radius of  
20 influence of well over 100 feet. And, in fact,  
21 right now we are doing the second phase of the test.  
22 We are running it on a long-term basis. And we have  
23 seen responses as much as 180 feet away.

24           In terms of vacuums, the highest vacuum we  
25 applied was about 80 inches of water. And that was

1 on screen C, I believe. The lowest vacuums we  
2 applied were -- actually, right now we're running  
3 the long-term test. We actually running all three  
4 wells. We are applying a vacuum of 24 inches of  
5 water. The flow rates that we have been getting are  
6 on the order of one to four cfm per foot of screen  
7 interval.

8 NIOU: One to four?

9 HOSANGADI: One to four cfm per foot.

10 NIOU: Scfm or --

11 HOSANGADI: Yeah, scfm.

12 NIOU: Per interval?

13 HOSANGADI: Per foot of screen interval.

14 BURIL: So if you got a 10-foot screen, you  
15 got a couple, three scf.

16 HOSANGADI: Right. Right now we're running a  
17 long-term test and we are applying a vacuum of about  
18 24 inches of water, roughly, on all three screens.  
19 And we are seeing a flow rate of around 270 cubic  
20 feet per minute.

21 NIOU: 270.

22 HOSANGADI: Right. That's with two blowers.

23 NIOU: All three together.

24 HOSANGADI: All three screens. The other  
25 interesting thing that we saw was for any given



1 week, if you were to compare the concentrations  
2 between, say, the 100 percent vacuum and the 75  
3 percent vacuum, the 50 and the 25, the flow rates,  
4 of course, decrease not exactly in a straight line  
5 but in a slight curve. But the concentrations  
6 essentially remained the same. And this was true  
7 for all four weeks, actually.

8           So in other words, by reducing the flow  
9 rate, we weren't really seeing any increase in the  
10 concentrations as you might have expected if it was  
11 diffusion limited.

12       BURIL: That's interesting. What increase in  
13 radius of influence do you think you had as you  
14 increased in vacuum, Vitthal?

15       HOSANGADI: That's a good question. There was  
16 no -- I mean the way I looked at the radius of  
17 influence is, say we were applying a vacuum that's  
18 100 percent and let's say, hypothetically, that's 50  
19 inches of water. I was looking not at the response  
20 as much as the normal as response. So if I'm  
21 getting a response of, say, five inches 100 feet  
22 away, then I divide that five by the 50 that I'm  
23 applying here. So that's a .1 normal as response.  
24 Say if I had a radius of 25 and here whatever  
25 response I get, I would again normalize with now 25.

1 And I saw roughly the same --

2 BURIL: Same ratio?

3 HOSANGADI: -- response normalized.

4 ROBLES: There was no change in concentration at

5 all?

6 HOSANGADI: Very little, if any.

7 ROBLES: That is strange.

8 BURIL: No, it's not. Do you know what that

9 tells you?

10 ROBLES: What?

11 BURIL: This place has got a solid vapor plume

12 across the entire area. It is basically the same

13 concentration throughout.

14 ROBLES: So it doesn't matter. Every cubic

15 layer you get out has the same concentration?

16 BURIL: If you think about the longevity of this

17 site and how long this stuff has had the opportunity

18 to sit down there and come to an equilibrium of some

19 sort over the entire site. Now, we're in the middle

20 of the plume.

21 HOSANGADI: The other thing to remember is each

22 test was only for about eight hours because of the

23 way we configured the pilot test. Because of that,

24 earlier we had the three screens and we thought as

25 we do the testing on each screen and then when we do

1 the testing on the combine, we hopefully see some  
2 trend which will allow us to select the most optimum  
3 concentration for test number 2, which is really the  
4 main test. But we didn't see anything. So in other  
5 words, I could get the most removal by just applying  
6 the highest vacuum that the blower could supply.

7 BURIL: The largest radius of influence.

8 HOSANGADI: Correct. So basically our first  
9 three tests when we were testing each individual  
10 screen, we had one blower that was capable of  
11 pulling 180 to 200 cfm.

12 Then for the fourth week we basically  
13 brought another blower, the biggest that we could get  
14 would give us something up around 110 cfm. So that  
15 was 300 cfm at the most. So what we did was for  
16 test 2 we just open all the isolation valves to the  
17 fullest extent possible and it was pulling from all  
18 screens; at the highest vacuum that we can apply and  
19 get the highest flow we can get, which is 270.

20 Now that we have started on Monday, it  
21 will be interesting to see if, indeed, there is a  
22 drop in the concentrations as we continue the test.  
23 And since -- based on these results, since we didn't  
24 see any major decrease in the concentrations over  
25 time we are taking some additional samples to see

1 what the concentrations in individual screens are.  
2 So far we are really doing the combined vapor that  
3 comes out. We are also planning on collecting three  
4 samples every maybe three or four days from each  
5 individual screen and just analyzing by 80/0 to see  
6 what the freon or the carbon tet is, if any one  
7 screen is producing more VOCs than the other, for  
8 example.

9 CARLOS: During the first test you were pulling  
10 from individual screens. Right?

11 HOSANGADI: Right. Week one we pulled from  
12 screen A. And then day one of each one was 100  
13 percent vacuum. Day 2 was 75. Day 3 was 50. Day 4  
14 was 25.

15 CARLOS: Even during the individual screen test  
16 you didn't see any change?

17 HOSANGADI: It was pretty steady. There were a  
18 couple of changes once or twice, but I don't think  
19 it was necessarily --

20 CARLOS: Nothing significant.

21 HOSANGADI: Nothing significant. So then a week  
22 to remove the screen B, then descending 100, 75, 50,  
23 25, and then screen C and then screen A plus B plus  
24 C.

25 ROBLES: Are you telling us, then, if you get

1 the biggest blower in the world we'll be able to  
2 clean faster, or suck up the whole underground?

3 HOSANGADI: Well, it really is -- that's a good  
4 question. We have to balance our flows, how much we  
5 apply on a well as compared to how many wells you  
6 want. You could potentially apply a vacuum on a  
7 single well and evacuate huge volumes of air. Of  
8 course, you would need a six-inch or an eight-inch  
9 well to do that. We could potentially see a  
10 tremendous radius of influence. But probably the  
11 logical thing would be to space our wells across the  
12 plume and then pull at a lower rate from each.

13 ROBLES: What that tells me is that we could  
14 really work on the sources very quickly.

15 BURIL: Not necessarily.

16 ROBLES: Not necessarily?

17 BURIL: It just depends on what you have out  
18 there --

19 HOSANGADI: Right.

20 BURIL: -- in terms of the sources. You may be  
21 drawing from like I've drawn here. That's why I  
22 kind of smiled and laughed and said the whole  
23 doggone place has got an even layer of vapor.

24 The way he described it initially, that if  
25 you've got -- the solid circle there is the edge of

1 your plume and basically everything inside there is  
2 just about the same concentration because of the  
3 longevity of what you've had here to equilibrate  
4 throughout the entire area. Toward the edges you're  
5 going to see plume, of course. But if we're in the  
6 middle of the plume, which we assume we are right  
7 now, as you increase vacuum you have greater and  
8 greater areas of influence, but you don't actually  
9 reach the edge of the plume. I would expect to see  
10 that same concentration coming in regardless of flow  
11 rate. And what you're describing, at least so far,  
12 sounds like that's exactly the kind of thing that we  
13 might be facing.

14 ROBLES: For me, it tells me that we want the  
15 highest, 100 percent. We want to suck up as much as  
16 we can.

17 BURIL: That's a given for just about any kind  
18 of a vapor extraction, except that when you start  
19 talking about longer term tests, which is what we're  
20 working up to now, you start getting changes in  
21 things because you may end up drawing it down and  
22 diluting that way and actually reduce your  
23 efficiency and cost you more money to blow more air  
24 for not much more contaminant. You get less bang  
25 for your buck, basically, or any other mechanism

1 that can introduce other than contaminant-laden  
2 vapors. So there's a trade-off between size and  
3 efficiency.

4 HOSANGADI: Right.

5 BURIL: Based on what Vitthal is seeing right  
6 now, it says that we hook up a generating station to  
7 a blower and just turn it loose and this thing will  
8 be clean in a little while. But from a practical  
9 limitations standpoint, that's not going to happen.  
10 We just haven't hit the practical limits that this  
11 site is capable of imposing on us yet.

12 HOSANGADI: The other interesting thing was that  
13 we are seeing influences as much as almost 180 feet  
14 away. That's as of this morning. So we will see  
15 how well we do.

16 ROBLES: So we need an air vacuum farm.

17 CUTLER: Vitthal made a comment that this is the  
18 best he's ever seen for SVE.

19 CARLOS: Almost 200 feet of influence.

20 HOSANGADI: I've done one site in Inglewood  
21 where we didn't have wells out that far. But if I  
22 were to take the same concept of normalized  
23 influence, our estimate of radius of influence was  
24 over 150 feet, basically.

25 NIOU: What's the concentration again?

1       HOSANGADI: The concentrations right now are on  
2 the order of anywhere from 100 to 200 milligrams per  
3 meter cubed.

4       NIOU: 100 to 200?

5       HOSANGADI: Milligrams per meter cube.

6       RIPPERDA: (UNINTELLIGIBLE).

7       HOSANGADI: Yeah, roughly. I mean, there is  
8 some amount of aeration, but it's not that great.

9       BURIL: It's almost up equivalent to PPM volume?

10       HOSANGADI: No. No, no.

11       NIOU: Is that PPMV or -- no.

12       HOSANGADI: No. Milligrams per meter cubed.

13       NIOU: So you already converted to --

14       HOSANGADI: I get lab results in both. I use  
15 this because it's easier to use for my calculations.

16               Just to give you a quick example, for  
17 screen A, my average concentrations for the four  
18 days of testing ranged from 153 to 170 milligrams  
19 per meter cubed for screen A.

20               Screen B was higher than all the others.  
21 And that showed an average concentration ranging  
22 from 237 to 263. And when I say "average," I mean  
23 the daily average for the three samples per day.

24               Screen C was lowest of the three. And  
25 that ranged from 100 to 170, basically, for the



1 different -- for the different days of testing.

2 And when we pulled from all four screens,  
3 we saw anywhere from 151 to 173 milligrams per meter  
4 cubed.

5 BURIL: The lowest screen and the lowest  
6 concentration.

7 HOSANGADI: The lowest screen had the lowest  
8 concentration, actually.

9 BURIL: How close is that lowest screen to  
10 groundwater?

11 RANDOLPH: All the way to groundwater.

12 HOSANGADI: It's all the way to groundwater.

13 BURIL: Is it actually penetrating the table?

14 RANDOLPH: It probably is by now.

15 HOSANGADI: It probably is by now.

16 RANDOLPH: Water has come up that high.

17 NIOU: Would that vacuum raise the water table  
18 so that flow rate would be reduced?

19 HOSANGADI: Not that much. Because on screen C,  
20 we were applying a vacuum of only 25 -- well, let's  
21 see. Around 80 inches of water. I'm sorry. So  
22 that's 80 divided by 12. It's around 6 1/2 feet of  
23 water. Our screens are almost 50 feet.

24 NIOU: So no problem.

25 HOSANGADI: And this is where, you know, the

1 idea of having -- of splitting that extrusion well  
2 up into three separate screens ended up to be a, you  
3 know, good way of doing. Otherwise, you know, we  
4 would never have known whether we are really  
5 impacting that lower zone, based on the fact it's so  
6 permeable.

7 BURIL: But, in fact, the lowest zone with the  
8 lowest concentrations coming out of the vapor leads  
9 me to believe that we have, with the water table  
10 pulsing up and down, up and down, that at the point  
11 in time where we actually pull back away, we could  
12 see those concentrations go up potentially.

13 HOSANGADI: Maybe. Yes.

14 BURIL: And as it's going up, pushing the vapor  
15 ahead of it may explain why we have a greater  
16 concentration of material at the shallow locations  
17 aside from sources. Because we didn't see it in the  
18 source locations in the vapor wells. It wasn't  
19 there. So you've got that pumping going on in this  
20 layer that doesn't see it. It's some added to, some  
21 taken away, some added to, some taken away. So that  
22 three-layer approach has got a very interesting  
23 application here.

24 HOSANGADI: Right. Actually, you know, based on  
25 the first four weeks of testing, we pulled a little

1 over -- between 10 and 11 pounds of carbon  
2 tetrachloride. That's four weeks of testing, each  
3 week consisting of about four eight-hour days.

4 The removal rate in terms of pounds per  
5 hour was anywhere from .04 to .16 pounds per hour.  
6 And the .16 was twice, actually. It was when we ran  
7 screen B at 100 percent vacuum and when we ran  
8 screen A, B, C at 100 percent vacuum, the  
9 concentrations dropped but the flow rate went up so  
10 the .16 is the same.

11 BURIL: (UNINTELLIGIBLE) same.

12 NIOU: Pounds per hour.

13 RANDOLPH: Chuck, the lowest screen maybe  
14 producing the lower concentrations is not really  
15 surprising from 25, 26 and 27, because we found that  
16 when we sampled the soil vapor last summer that the  
17 concentrations did decrease within the last 20 to 30  
18 feet somewhat above groundwater.

19 BURIL: That makes sense.

20 RANDOLPH: In 27 it went up. That was cursive  
21 to the other three.

22 BURIL: Well, it makes some sense to me if you  
23 think about the pumping of this groundwater up and  
24 down, you know, the natural fluctuation. As you  
25 drive the vapor out, as things become saturated

1 you'll see the groundwater concentration  
2 (UNINTELLIGIBLE) vapor concentration will naturally,  
3 the rate will be pushed further up into the column  
4 and may accumulate through whatever mechanism in  
5 that first screen A area.

6           And so screen A, at a minimum, sounds like  
7 a pretty good approach to remediating this place,  
8 and as the water table allows us, additional ones as  
9 well. Being able to break it like that, to maximize  
10 the amount of mass removed is going to be something  
11 I think we should look at.

12           HOSANGADI: Actually, as we are doing this test,  
13 like I mentioned earlier, will be about three days  
14 or so, in addition to collecting the A plus B plus C  
15 sample, we will be looking at the carbon tet in each  
16 individual well. So as time progresses, we'll be  
17 able to see, hopefully, some trends in A, B and C.  
18 If something keeps constant or if something drops,  
19 then that might add a couple of days of testing just  
20 with what shows the highest removal.

21           NIOU: That's what I would like to recommend,  
22 that if you don't see the drop or doing this long  
23 term, I really would like to recommend you take it  
24 longer. Because we really want to see that lowering  
25 so that we know whether you have reached somewhere

1 of your limitation. Otherwise, you still see the  
2 only inside. You never know what's the trend in  
3 future.

4 HOSANGADI: Depends on how we are looking at  
5 this. I mean, if -- there are two ways of looking  
6 at it. One is, of course, is the way you say.

7 The other way, since this is a pilot test  
8 and we are trying to get design parameters, running  
9 it for the extra time and seeing that, normally you  
10 will do a full scale approach, not necessarily a  
11 pilot test approach. We will still be able to get  
12 the bulk of data that we want to design a full-scale  
13 system. If you were to run it for, say, one month,  
14 you know, or two or three weeks like you have  
15 planned to do right now as opposed to running it at  
16 that critical location for six months, is the data  
17 that we get going to change our design  
18 significantly? That's -- you know, that's the other  
19 side of the coin.

20 Does it really matter if you run it for  
21 six months and get, you know, X pounds or more, or  
22 if we ran it for one month and then use the data in  
23 a more --

24 NIOU: But there will be a point at that time  
25 that you probably can have better feeling about

1 number of wells versus the size of the pump with  
2 that information.

3 BURIL: I think one of the things we need to --

4 NIOU: One way or the other. It's your call.

5 BURIL: We have to keep in mind the thrust of  
6 this particular effort, and that was that we knew  
7 that we had an area centered around boring 16 that  
8 appeared to have fairly high contaminant  
9 concentration vapors. And this test was really  
10 meant to figure out two things. One, conceptually  
11 does SVE make any sense at all, should we even waste  
12 our time trying to go to a full-scale system? And,  
13 two, to give us enough design parameters to be able  
14 to install an interim remedial action, not  
15 necessarily one that's going to deal with the entire  
16 vapor issue, which is why we went to the other  
17 characterization wells.

18 So I agree with Vitthal, that if we  
19 continue to test, it may not change anything that we  
20 do in terms of this interim remedial action that we  
21 want to put into place. We may be in a position of  
22 needing to continue on with other characterization.  
23 Just between us kids here, I think we are going to  
24 have more characterization of OU-2.

25 But I would be uncomfortable in saying

1 that a longer test is going to give us more  
2 information with which to increase or decrease the  
3 size of the system. If we haven't reached a  
4 practical limit based on what we're doing now, then  
5 we probably haven't reached the limit of  
6 characterization that's required of us. Because  
7 with 180 feet of influence under a condition he's  
8 got now, when he runs this test long term, I would  
9 expect to see that go up to some degree. But if we  
10 don't run into that limit, we don't see that drop,  
11 I'm not going to be particularly surprised, because  
12 that simply bolsters my own little theory that I put  
13 on the board here, that we may be in a position of  
14 needing to do some other kinds of characterization  
15 in order to understand the full extent of the plume.

16 But that doesn't mean that we should stop  
17 the work we're doing now and that doesn't mean that  
18 we shouldn't install some form of interim  
19 remediation to get this thing working now when we  
20 found a system, geologic system that is so amenable  
21 to it.

22 In other words, proceed with all due haste  
23 to get a system working in the ground and if that  
24 addresses the whole problem, wonderful. If it  
25 doesn't, the next iteration is to figure out what

1 will, and then put that into place. But at least we  
2 have something in place at that juncture.

3 That's my approach. That's my concept of  
4 this whole thing.

5 ATWATER: What would be your schedule to go  
6 forward on that, the interim project?

7 BURIL: We actually have it built into the  
8 schedule right now. I think we're talking about  
9 late this year. I'd have to go back and look, to be  
10 honest. But if memory serves, it's late this year.

11 ROBLES: Let me ask a stupid question. Is 10  
12 pounds per hour good?

13 HOSANGADI: It's .1 pounds per hour.

14 RIPPERDA: 10 pounds per hour would be awesome.

15 BURIL: 10 pounds an hour, my God.

16 ROBLES: How about one pound?

17 BURIL: That's like slowly pouring liquid into  
18 the system.

19 ROBLES: What do you mean?

20 HOSANGADI: I mean, it depends on what is there.  
21 If we have 10 pounds and we are pulling at .1 pounds  
22 per hour, it's an excellent rate. But if you have  
23 2,000 pounds, then pulling at .1 pounds, that is not  
24 an excellent rate.

25 CARLOS: So depends balancing your --



1 BURIL: Depends on the volume you're trying to  
2 draw.

3 ROBLES: So what you're saying, it could take 40  
4 years.

5 HOSANGADI: Again, it depends on how much there  
6 is, basically.

7 BURIL: Pete, the problem is we don't have an  
8 understanding of the total volume of the material  
9 we're trying to draw. That's part of what our  
10 characterization work is supposed to help us  
11 understand, is what could be the total volume that  
12 we would draw. If we make the calculation, as back  
13 in the envelope as it might be, that from the west  
14 side to the east side and from the fault to the  
15 southern boundary we've got 10,000 pounds of vapor  
16 that needs to be pulled out of here, .1 through one  
17 well, we're going to be here a long time. Now, you  
18 multiply that by X number of wells, you cut it down  
19 by that factor of X.

20 HOSANGADI: Right. And the other factor that  
21 also comes in is the number of pore volumes. For  
22 example, if we were to have an area that we believe  
23 is impacted, we look at the amount of pore volumes  
24 that exist, pore volumes of air. And then, you  
25 know, based on all the SVE projects that have been

1 completed to date there are some number as to how  
2 many pore volumes one would need to evacuate. It  
3 would be particularly easier here because we suspect  
4 most of it is all in the vapor form. So there is no  
5 additional time for it to volatilize. It's already  
6 volatile, so all you need to do is flush out X  
7 number of pore volumes.

8 BURIL: And the nice thing, too, is that the  
9 type of things that he's seeing is that these pore  
10 volumes are not closed. They're fairly open. So  
11 you should be able to get the vast majority of this  
12 stuff out.

13 CARLOS: So far you don't have any indication  
14 that there's diffusion limiting (UNINTELLIGIBLE).

15 HOSANGADI: Not really. That's based, again,  
16 on, you know, the almost steady concentrations  
17 regardless of what vacuums we are applying.

18 BURIL: So it's looking good. It's looking real  
19 good. Your testing will be done overall when,  
20 Vitthal?

21 HOSANGADI: We started test 2 on Monday. And we  
22 had said we would run it for about two weeks.  
23 Depending on how things go, I would say about two to  
24 three weeks.

25 BURIL: So then by perhaps our next telecon we

1 would have some preliminary information on the  
2 overall test and then certainly by our next RPM  
3 meeting we should be able to talk in detail about  
4 what this test has told us and what the next steps  
5 ought to be.

6 CARLOS: The results of the soil vapor pilot  
7 test, extraction pilot test, will this be a separate  
8 report, or included in the RI?

9 BURIL: It will be included -- actually, I think  
10 it will be included in the FS as opposed to the RI.  
11 I don't know that we've discussed that as a  
12 secondary report. I think we were going to do that.

13 RANDOLPH: We have.

14 BURIL: You have established it as being a  
15 separate report.

16 RANDOLPH: We have. Yes. We discussed that  
17 some time ago, that it would be a secondary report.

18 BURIL: That's my short-term memory going to  
19 heck again. I know that they're going to be  
20 providing us a report. And certainly, I think that  
21 there's no reason why we wouldn't share that with  
22 you prior to the RI. So if we want to term that as  
23 a secondary document, that would be incorporated  
24 further on down the road in the FS. I don't see a  
25 problem with that.

1       ATWATER: I'm curious. What, ballpark -- how  
2 much does it cost to put one of these wells in and  
3 then operate?

4       HOSANGADI: The well itself, I don't know a  
5 number there.

6       RANDOLPH: Just putting in the well itself, on a  
7 rough ballpark guess, would be \$25,000.

8       ATWATER: And then the equipment and everything  
9 else to operate?

10       HOSANGADI: For a single well, again, a very  
11 ballpark number, I would think the blower and the  
12 carbon that we would need and getting power to that  
13 point would be right around anywhere from 25- to  
14 \$50,000. Right around there.

15       BURIL: In rough numbers, 75 to 100K.

16       ATWATER: Per well?

17       BURIL: Per well.

18       HOSANGADI: Right.

19       BURIL: And the number of wells we would need is  
20 somewhat indeterminate. I would guess we would need  
21 more than one --

22       HOSANGADI: Right.

23       BURIL: -- but probably less than 100.

24       HOSANGADI: And then there's an operating cost.

25       ATWATER: Now we get our boundary conditions.

1           So if you put a dozen in, hypothetically,  
2 you're talking about a million, million and a half  
3 dollars.

4           HOSANGADI: Then you have to operate it for --

5           ATWATER: The power and all that. There's  
6 maintenance, and all that, so it's --

7           BURIL: The waste generation would be something  
8 that we'd have to take a look at.

9           HOSANGADI: I would say, you know, ballpark --

10          ATWATER: How often do you have to change the  
11 carbon on this?

12          HOSANGADI: That's, again, depending on how much  
13 we pull out.

14          BURIL: It all depends on the mass flux coming  
15 into the system.

16          HOSANGADI: I would say, just ballpark again,  
17 anywhere from about 60- to 100-, \$120,000 per year,  
18 depending on how much we pull out.

19          BURIL: That's not on a per-well basis, though,  
20 is it?

21          HOSANGADI: Per well.

22          ATWATER: So it's roughly equal to the capital  
23 cost, then.

24          HOSANGADI: Again, yeah. That's the -- it  
25 depends on, you know, how -- you know, whether we

1 pull out -- see, there is also some amount of loss  
2 of efficiency when you pull at a high rate because  
3 then expected efficiency decreases. There's also  
4 some loss of efficiency in the carbon, because since  
5 carbon basically, the absorption of the  
6 concentration gradient-driven phenomenon, if you  
7 were to have, you know, for example, 10 pounds of  
8 VOCs in 100 cfm, we would be able to absorb more of  
9 it that way than if you would have the 10 pounds  
10 distributed, or 1,000 cfm, for example. So, again  
11 --

12 BURIL: It really comes down to function of  
13 content times carbon.

14 HOSANGADI: Yes.

15 RIPPERDA: How much does it cost, or how  
16 temporary is the test well you have going now?

17 HOSANGADI: Right now it's very temporary. We  
18 are running two blowers on two generators. We  
19 haven't gotten power out there yet.

20 BURIL: As far as the actual condition of the  
21 well itself, I think that we could install a  
22 moderate permanent system on the well itself.  
23 There's no reason to suspect that the well itself  
24 will cease to be functional at the end of the pilot  
25 test.

1       RIPPERDA: It's generally what Stephen was  
2 talking about before about shutting this thing off  
3 as soon as we could because you got your test  
4 parameters accomplished, or letting it run.

5       BURIL: Well, we're talking about letting it run  
6 in terms of the remedial action --

7       RIPPERDA: I'm not talking about remedial  
8 action. It's like the few pounds you get out  
9 doesn't make that much difference now versus a year  
10 from now. But like jumping from this to a \$2  
11 million project, that if you don't think you have  
12 much diffusion going on, it's just a question of  
13 getting pore volumes of air out. It's like if you  
14 just let this thing run for months while you're  
15 doing all the paperwork and the RI and everything  
16 and, you know, it starts to show decreasing  
17 concentrations, maybe you don't want to go to a \$2  
18 million remediation system.

19       BURIL: I see what you're saying. I see. Well,  
20 that's something we can look at, as probably we  
21 should be flexible as the data comes in and we  
22 understand what it's telling us.

23       Stephen's suggestion is not bad, by any  
24 means. It's something we should possibly be  
25 prepared to do, depending on what the data tells us

1 as we go along.

2 RIPPERDA: Yeah, that's --

3 HOSANGADI: Before I forget, there's one other  
4 point I wanted to make on the -- this is one of the  
5 questions that was brought up earlier about any  
6 leakage that we might have when applying the vacuum  
7 on one screen and see if there was any response in  
8 the other screens.

9 For the most part, we saw no responses in  
10 the idle screens when we are applying vacuum to the  
11 active screen, except in one case when we applied  
12 the maximum vacuum of 80 inches of water on screen  
13 C, we saw three inches vacuum in screen B. That is  
14 the only time that we actually saw any,  
15 quote-unquote, leaking.

16 BURIL: That was a 5 percent response.

17 HOSANGADI: Right. And only for that one day of  
18 screening. Never saw it any other days.

19 CUTLER: It's possibly like in the groundwater.  
20 The silt layers probably are in the vadose zone as  
21 well, so you're getting this long areal extent.

22 BURIL: You're concentrating the vacuum in these  
23 pipelines as opposed to spreading it out. That's  
24 maybe why you're getting the high rate of --

25 RIPPERDA: Does this show all the bore holes, or



1 has the SVE test got a lot more bore holes than this  
2 shows?

3 HOSANGADI: The SVE workplan shows the S12 and  
4 then shows the existing wells at that time and also  
5 the proposed wells since then, so --

6 RANDOLPH: It's on there.

7 CARLOS: I think that's the one.

8 RIPPERDA: When you're talking about 180-foot  
9 influence, you're pumping out of bore hole 16?

10 HOSANGADI: No.

11 RANDOLPH: No.

12 BURIL: It's near that.

13 CUTLER: It's real close.

14 RANDOLPH: It's where the square is. Just south  
15 of the square.

16 RIPPERDA: The square right next to it?

17 RANDOLPH: Yes.

18 RIPPERDA: Okay.

19 HOSANGADI: When we are applying vacuum for that  
20 square, we are seeing a response, we saw a response  
21 in Well Number 27, actually. I mean, of course, you  
22 see --

23 NIOU: How far is it?

24 HOSANGADI: That's almost 180 feet away. We are  
25 seeing, you know, correspondingly higher vacuums in

1 25, 26 and then 28.

2 RANDOLPH: We haven't had this well surveyed in  
3 yet for lateral position, but in due course of time.  
4 But in rough calculations that I've done, it's 188  
5 feet, plus or minus 2 feet.

6 RIPPERDA: And you put that in the --

7 RANDOLPH: That was last spring.

8 RIPPERDA: -- hot spot of --

9 BURIL: That was the hot spot that we could  
10 identify at the time, yes.

11 RANDOLPH: 25, 26, 27 and 28 are -- 25 was  
12 actually drilled and replaced 16. Kind of a  
13 triangular shape that we put in a year ago to try to  
14 get a feel for how big the plume was. And, of  
15 course, at that time it was even suggested that  
16 those were too far away from the hot spot and  
17 probably wouldn't get any results. Well, the  
18 results we got out of those other three holes are  
19 just as hot as what we found right in the middle of  
20 it. So we stepped out again.

21 BURIL: Which, once again, lends a little more  
22 credibility to this theory here.

23 HOSANGADI: (UNINTELLIGIBLE) other testing at  
24 least one more well to see what the responses in  
25 that well come from that these screens are, in fact,

1 valid.

2 RIPPERDA: And, in fact, you got carbon tet in  
3 the limited water sample you took from boring number  
4 36.

5 RANDOLPH: Yes, we did. It was 43 PPB.

6 RIPPERDA: That shows that your area of  
7 contamination is fairly -- spread over a fairly  
8 large area.

9 BURIL: Yes, it does, which is why I made the  
10 gentleman's bet that we're going to be doing more  
11 work in a week or two.

12 Pete suggests that we break for lunch.  
13 We've probably got another hour or so of information  
14 we want to share with you on the ATSDR report for  
15 the perchlorate work that we're currently getting  
16 ready to undertake, and a few other things.

17 ROBLES: And comments.

18 BURIL: And comments and action items. So take  
19 a break for lunch, come back about -- what time is  
20 it?

21 RIPPERDA: It's only 11:30 now.

22 ROBLES: I got quarter to 12:00, according to my  
23 watch.

24 RIPPERDA: I wouldn't mind just going straight  
25 through and finishing up at 1:00 o'clock.

1 BURIL: That's fine. We can do that.

2 ROBLES: That's fine.

3 BURIL: Let's do that. Why don't we take 10.

4 (A recess was taken from  
5 11:37 A.M. to 11:50 A.M.)

6 ATWATER: What I have here, the first thing is a  
7 background of the Raymond Basin Management Board.  
8 Just a little footnote on history.

9 It has the history of that and the  
10 background of the Board. It's a court-appointed  
11 board to deal with the adjudication. The Raymond  
12 Basin was the first court-adjudicated basin in  
13 California. It was done in 1944. So it's a  
14 court-appointed -- to deal with all the water rights  
15 in the Raymond Basin. And amendments to the  
16 judgment in the early '80s formed the Board as an  
17 arm of the court to manage storage rights, pumping  
18 changes. During the drought, for example, the City  
19 of Sierra Madre overpumped its allocation quite a  
20 bit and then they got into a program where they put  
21 water back in the basin so that they didn't, if you  
22 will, overpump, create an overdraft.

23 The other thing that happened in '82 is  
24 that the judgment was amended to specifically  
25 provide language where the Board has responsibility

1 not for just water rights and storage credits like  
2 the City of Pasadena does in the Arroyo and all  
3 that, they specifically have legal responsibility to  
4 protect the water quality of the basin, and that  
5 sort of thing, which is not unique.

6 But it has the most direct language of all  
7 the judgments in California as far as protection of  
8 water quality. And that's --

9 I used to be down in central and west  
10 basin, the two large adjudicated basins in the  
11 coastal plain. I used to be the executive secretary  
12 of the two basins in that. We have a water  
13 replenishment district there which has statutory  
14 authority for groundwater management. And it has  
15 the language, not the judgment, for protection of  
16 water quality.

17 But that's about it. The background here  
18 gives you kind of the history and the pumping. The  
19 pumping records are over the last six years. You  
20 can see all the pumpers by sub-basin. Then there's  
21 also the Colorado River and Lincoln Avenue water  
22 quality data.

23 Basically, since we found out about the  
24 perchlorate last summer, Ron has sampled his  
25 Colorado River water out of the Metropolitan feeder.

1 It's called the upper feeder. It takes Colorado  
2 River water and sometimes a blend of Colorado River  
3 and State Project water that goes to both Pasadena  
4 and Foothill. It's just below the Rose Bowl, is  
5 where the connection is. And the numbers, you can  
6 see, are all in the 3 or ND, et cetera.

7 DHS now has defined that anything below 5  
8 is officially nondetect even though the lab results  
9 for a while there over the last nine months were  
10 measured at these low levels. They're basically  
11 saying that anything below 5, because of the  
12 accuracy of the lab technology, et cetera, they're  
13 officially calling that nondetect.

14 And then you can see on the second page  
15 the Lincoln Avenue results. It was shut down in  
16 February-March and when they put it back on in  
17 April, it had a 5.8, and then since then the last  
18 three results have been ND.

19 And then the last page is Ron has asked to  
20 do a round of sampling of all the wells in the area.  
21 So when we get that data, I'll get that back over to  
22 you, Chuck.

23 How often do you do these monitoring  
24 reports, like the January-February? Do you do them  
25 every --

1 CUTLER: Once a quarter. Probably this week we  
2 will finish this quarter's round of sampling.

3 ATWATER: That quarter would be, what,  
4 February-March or --

5 CUTLER: It was the April-May event. This is  
6 our second event for this year.

7 ATWATER: If you'd like, I'll be happy to try  
8 and get to you all of the producer well results for  
9 the April-May time period so we get this data to put  
10 on that perchlorate map.

11 BURIL: That would be fine.

12 CUTLER: If you have the data.

13 BURIL: That would be fine. That would be  
14 great.

15 ATWATER: I did figure it would be help -- it  
16 adds a lot to that map.

17 RIPPERDA: I hate looking at this map and not  
18 knowing what the boundary conditions are.

19 CUTLER: Our intent was to put it on there. We  
20 never did get it yet.

21 BURIL: Yes. That would be great.

22 ATWATER: You just use the upper level in the  
23 one map that you put in there so you'll put -- are  
24 we going to use three levels now? I'll let you  
25 interpret how you --

1 CUTLER: What we've done is, any level that has  
2 a contaminant, perchlorate, TCE, PCE or carbon tet  
3 above an MCL or action level will be mapped. So  
4 there isn't a map for, say, the second layer of  
5 perchlorate. I'm not sure if we need to use it  
6 because there wasn't anything detected above 18  
7 parts per billion on the perchlorate. It doesn't  
8 mean it wasn't detected in the second layer. It  
9 just wasn't detected above an action level. That's  
10 the rationale between when a contour map is prepared  
11 not for a particular layer.

12 RIPPERDA: I would actually like to see numbers  
13 reported even below action levels. Like your  
14 contour line starts at an action level, but if  
15 there's numbers that are detected that are lower  
16 than an action level but above detection limits, it  
17 would still be nice to see them on the map.

18 CUTLER: They are there. On the maps anything  
19 above an action level, and when we do make a map,  
20 there will be levels beyond.

21 ROBLES: How about below? He's saying below the  
22 action level.

23 RIPPERDA: Right. So that's below the action  
24 level.

25 ATWATER: For perchlorate -- if 5 is the



1 official DHS detection limit, then do 5 to 18. Show  
2 where we have lab results that are in the 5 to 18  
3 and then anything below 5 show it as ND.

4 BURIL: I don't know that that's going to do us  
5 any good because depending upon the background  
6 concentrations that we see of perchlorate, we may  
7 have the entire map, as on this thing.

8 RIPPERDA: Right. I don't want to see a contour  
9 line at 5, but I just want to see the numbers.

10 BURIL: Just the numbers?

11 RIPPERDA: The numbers that were reported for  
12 these wells for the area.

13 BURIL: That's easily done.

14 CUTLER: Whenever there's a map, all the data  
15 for that layer is on that map. The only time we  
16 don't have a map is where none of the data is above  
17 an action level or an MCL. Does that make sense?

18 RIPPERDA: Yes.

19 ATWATER: (UNINTELLIGIBLE) did you decide that's  
20 level layer 1, then? Because that's running at 100  
21 plus.

22 CUTLER: We never actually got any data. Over  
23 the phone we heard it was at 140 a few months ago or  
24 something.

25 BURIL: We've never actually received anything

1 written. We've been told this through the meetings  
2 and such and we've taken that as gospel. But we've  
3 never actually received written documentation that  
4 says it is this amount at this date.

5 CUTLER: That's a good point. I mean, a lot of  
6 these screens go across two levels.

7 ATWATER: Exactly. I mean, the first production  
8 well, interpreting what level it is, we at least --

9 RIPPERDA: But we kind of know that.

10 BURIL: Richard, let me hasten to add that the  
11 City of Pasadena is very good about sending us all  
12 the information from their running wells and  
13 influent and effluent concentrations from their  
14 treatment plant. As far as the ones that aren't  
15 typically part of their production where they're  
16 just testing, we haven't seen that officially per  
17 se. We just hear it through the meetings and so  
18 forth.

19 CUTLER: When they first discovered perchlorate  
20 we got something in writing where they took our data  
21 and their data and put it on the same table. We  
22 have only seen that.

23 ATWATER: That similar (UNINTELLIGIBLE) just  
24 published all of the sampling throughout the basin.  
25 You had all that.

1 CUTLER: We got that.

2 BURIL: We have that.

3 CUTLER: That was the very first event.

4 ATWATER: That was done -- I think the samples  
5 were in June and were published in July.

6 BURIL: July, August.

7 ATWATER: Then we did the repeat samples in  
8 August and September.

9 BURIL: I'm not sure that we have that one. I'd  
10 have to go back and look in the file. But  
11 subsequent to that we haven't seen anything from  
12 anybody except DHS, and DHS is making it available  
13 to everyone.

14 ATWATER: Let me see what I can do for you.

15 RIPPERDA: I would rather have -- I would love  
16 to have this information included in the future  
17 quarterly reports. I'd rather have the quarterly  
18 report be late in order to pull this information  
19 together (UNINTELLIGIBLE) getting it out in time,  
20 not getting the information from Ron Palmer,  
21 Pasadena, wherever you have to get it from.

22 BURIL: All right. We'll do the best we can.  
23 That's fine.

24 RIPPERDA: Since we're talking about quarterly  
25 reports, I don't think -- I personally don't need a

1 three-inch thick report with all the raw data.

2 BURIL: How would you rather see it broken up?

3 RIPPERDA: I saw an annual report that was that  
4 thick which had all the figures and some tables  
5 without all the stiff diagrams, without all the data  
6 logs. I would rather just get the text, the maps  
7 and tables.

8 BURIL: Well, the only thing I'd look to is  
9 something that's complete and is able to stand  
10 alone. We can break that into two parts, I suppose.  
11 My only reluctance on this is logistics, that's all.  
12 Convenience is obviously something that makes good  
13 sense.

14 RIPPERDA: I can throw a thick book report on my  
15 bookshelf as easily as I can throw a thin one. It  
16 just seems kind of sad to generate --

17 BURIL: Understand what we need to put in the  
18 repositories, then.

19 ROBLES: No, we put the whole thing in the  
20 repository.

21 CARLOS: Maybe break it into two volumes.  
22 Volume I would just be the text. Volume II --

23 BURIL: Volume I being the meat, so to speak.

24 CUTLER: Two volumes and --

25 BURIL: Would be maybe like yea. And then

1 Volume II with all the back-up information that  
2 supports what's in Volume I would be the remaining  
3 two and a half inches of information.

4 CARLOS: And then Volume II, if you want it you  
5 can get it. It's upon request.

6 BURIL: So that we would only submit to you  
7 Volume I and then on request if you want to see  
8 Volume II, we would send it to you? Is that what  
9 you're thinking?

10 RIPPERDA: Yes.

11 RANDOLPH: Either that or send him everything as  
12 is and an empty binder and let him keep what he  
13 wants.

14 BURIL: Have to break it down for him.

15 RIPPERDA: My only (UNINTELLIGIBLE) as an EPA  
16 employee is that we try to save a little paper when  
17 we can.

18 BURIL: That's fine.

19 ATWATER: (UNINTELLIGIBLE) Montgomery Lab  
20 results. I mean --

21 BURIL: I don't have a problem with breaking it  
22 two into volumes.

23 ATWATER: I assume you guys -- I mean you guys  
24 are doing QA/QC. We don't need to look at all the  
25 lab sheets.

1 BURIL: That's purely for completeness sake.

2 CARLOS: In that case, we want the whole  
3 (UNINTELLIGIBLE).

4 BURIL: Let me suggest this. How about on the  
5 next one we split it where we think it makes sense  
6 in terms of what I'll call the meat volume and the  
7 back-up volume. And in the meat volume you'll have  
8 text and the tables and the figures that kind of lay  
9 out what we have found.

10 And then in the back-up volume you'll have  
11 all the RAB data, QA/QC and all the things that are  
12 typically associated with the whole sampling  
13 program, unless you want to look at it, you can  
14 either put it on the shelf or if you don't want it,  
15 then we'll have it available for you on request.

16 ATWATER: Well, every quarter the sampling  
17 protocol ought to be identical unless there's -- if  
18 there's something different, then people out to know  
19 that, change the procedure.

20 BURIL: We wouldn't change procedure unless we  
21 had gone through the --

22 ATWATER: Sure.

23 BURIL: -- review with you folks first. But I  
24 think that for our purposes of complete  
25 documentation and maintenance of an administrative

1 record and so forth, one or two volumes makes no  
2 difference. But we're going to generate both. And  
3 if you folks only want Volume I with the option of  
4 getting Volume II, if you see something that's a  
5 concern, that's fine. That's not a problem.

6 NOVELLY: So, Mark, you want Volume I unless II  
7 is requested. You want both automatically.

8 What do you want?

9 GEBERT: Both.

10 NOVELLY: Okay.

11 RIPPERDA: Then my request is moot because  
12 you're going to have to generate it all anyway.

13 NOVELLY: It will save us one.

14 ATWATER: As a summary on this subject, who  
15 should I work with? Because there's no reason why  
16 we can't give you, and not slow you down, the  
17 producer water quality data.

18 BURIL: Give it to me.

19 ROBLES: Straight to him.

20 BURIL: Just fire it straight to me and it will  
21 go --

22 ATWATER: Do you want us to put it on your map  
23 or do you want us to --

24 BURIL: Electronic table would probably be the  
25 best. And then we can add it into our tables and so

1 forth from that.

2 ATWATER: Sure. We'll give you electronic, a  
3 spreadsheet.

4 BURIL: Word file or spreadsheet  
5 (UNINTELLIGIBLE). I think Foster Wheeler can use it  
6 from that without too much trouble. That would be  
7 ideal for me because then I can put all these  
8 spreadsheets together.

9 ATWATER: The one we just got was  
10 January-February and this one will be an April-May.  
11 So we'll want to give you all the data from all the  
12 producer wells --

13 BURIL: Right up to June, if you can.

14 ATWATER: Sure. And when would you want that  
15 by?

16 BURIL: Yesterday.

17 ATWATER: We haven't sampled some of them yet.

18 BURIL: As soon as you can.

19 CUTLER: They'll finish sampling this week. It  
20 takes us about a minimum of three weeks to get our  
21 data.

22 ATWATER: From Montgomery Labs?

23 CUTLER: Yes.

24 ATWATER: And then when do you expect to publish  
25 that, then?



1 BURIL: I can't remember the date we have on the  
2 schedule as being due. But I think it's the end of  
3 June, isn't it, Mark?

4 CUTLER: Yes. Mid, end June is when we get the  
5 reports out.

6 BURIL: Something in that time frame is when we  
7 get the quotes out.

8 HOSANGADI: We also want to look at older  
9 results.

10 CUTLER: Right. This would be a good time to  
11 bring that up. Can we get data from June '94  
12 through March '98? VOC data.

13 ATWATER: You just want all the VOC data?

14 BURIL: Mark, you remember that database that we  
15 have; right? You do have a copy of that, because I  
16 remember I sent it to you.

17 CUTLER: Right. But that's older stuff. That's  
18 pre-'94.

19 BURIL: Is that pre-'94? I know a lot of it  
20 goes in -- some of it's in '94, some '93, but most  
21 of it's behind that.

22 CUTLER: There's a lot of good data there.  
23 Several years of data, but it was a little older.

24 BURIL: It actually is subsequent to what Ron  
25 provided to me already here a couple years ago.

1       ATWATER: Yeah. Under DHS Title 22 regulations  
2 all water utilities have to sample every quarter if  
3 they have anything. If they have nondetect, then  
4 they can get waivers over time. But then you've  
5 got -- but all that should be electronically  
6 accessible.

7       CUTLER: We have requested the DHS and it's  
8 been --

9       ATWATER: Goes in the black hole.

10       CUTLER: -- frustrating.

11       BURIL: We are incredibly disadvantaged.

12       ATWATER: I understand.

13       CUTLER: So we talked to Chuck just a few days  
14 ago in April about trying another route because the  
15 clock is ticking.

16       BURIL: Your attendance here is a very  
17 convenient means of making another request to the  
18 water purveyors in somewhat an indirect fashion.

19       ATWATER: You want VOCs and metals.

20       BURIL: And metals. Actually, anything you got  
21 would be great. It would be nice to be able to  
22 compare water chemistries, too.

23       ATWATER: They'll sample for nitrates and  
24 general minerals and all that.

25       HOSANGADI: The (UNINTELLIGIBLE) because then we

1 can figure out what we want to weed out.

2 CUTLER: One of the things the risk assessors  
3 brought up, they asked is there any way we can get  
4 post-treatment data. Is that something you guys  
5 have?

6 BURIL: DHS has it, I know.

7 ATWATER: The purveyors also have that. They  
8 have to provide --

9 BURIL: They have to provide it for their  
10 permits.

11 ATWATER: There's not very much treatment.  
12 There's only treatment of nitrate (UNINTELLIGIBLE)  
13 but there's a couple --

14 BURIL: It would be principally Lincoln Avenue,  
15 Valley and Pasadena. Pasadena's we already get.

16 CUTLER: You mean treatment?

17 BURIL: Yes, we get that in those monthly  
18 reports that we get from them. You should have  
19 gotten copies of those because I know Kathy pulled  
20 them together. This is the monthly groundwater  
21 treatment reports.

22 CUTLER: I got something from you a while back.  
23 I'll have to look.

24 BURIL: Check and see. We have that stuff. I  
25 can reach in the file drawer and grab it. It's that

1 quick.

2 CUTLER: That's for the city?

3 BURIL: The City of Pasadena's plant. Yes. And  
4 they have the influent concentrations for the wells  
5 that they run into it also. So if you haven't got  
6 that -- I'm almost certain that we gave it to you,  
7 but if you haven't got it, let me know because we  
8 can give it to you in a heartbeat.

9 CUTLER: Do you have the data for everybody?

10 BURIL: That's only Pasadena. That's all.  
11 Lincoln Avenue has been reluctant. And Valley we've  
12 never asked.

13 CUTLER: They're upgradient. That's okay.

14 BURIL: That will be great if we can fill in all  
15 these data gaps.

16 ATWATER: I'll get that to you.

17 BURIL: Mark, I have one for you. And this is  
18 with regard to the EPA comments that you indicated,  
19 I think, was regarding QA/QC and the addenda and so  
20 forth. We talked about that by phone here a while  
21 back.

22 RIPPERDA: I said at the time you could pretty  
23 much forget about it.

24 BURIL: I just wanted to be sure that I  
25 understood that.

1 ROBLES: Official.

2 BURIL: So we are done officially and --

3 RIPPERDA: You have whatever comments you're  
4 going to get.

5 BURIL: Great. That's fine. Okay.

6 I guess we need to talk a little bit --  
7 we've been batting around data and so forth. One of  
8 the things I'd like to bring you up to speed on is  
9 some of the continuing work that we're doing on the  
10 perchlorate issue.

11 Last time that we spoke we talked about  
12 the work that we're doing with Calgon. We ran into  
13 a snag with them that we were fortunate in being  
14 able to unsnag. The snag was basically that in  
15 terms of our participation in the perchlorate --  
16 they call it the task force or the steering  
17 committee in San Gabriel Valley?

18 ROBLES: The steering committee. The  
19 Perchlorate Steering Committee of San Gabriel, and  
20 Ron Palmer was there with me and Judy.

21 BURIL: But I was off on another JPL  
22 requirement. But it came to our attention that  
23 Calgon was doing work, which appeared to be very  
24 similar to our own, at the San Gabriel site and at  
25 considerably less cost.

1        ROBLES: 35K and they were funding the rest out  
2 of their own pocket.

3        BURIL: They were proposing to us a dollar cost  
4 of something just over 200,000, a fairly healthy  
5 difference.

6                We put our procurement on hold pending a  
7 resolution of what the difference was and why.  
8 Peter and I spoke at length with the Calgon folks on  
9 Monday morning, and we are both satisfied that the  
10 scope of work, the level of testing, the level of  
11 Calgon personnel support is sufficiently larger than  
12 the San Gabriel effort to justify the increased  
13 cost. And so I've already forwarded on the  
14 contractual package for Calgon to our procurement  
15 folks, and they are working on it as we speak. And  
16 we hope to have that thing back up and running here  
17 in a fairly short period of time.

18                And we don't have an exact schedule for  
19 that particular work yet, but as soon as we have our  
20 contract in a position of knowing when it's going to  
21 be issued, we'll get a schedule from Calgon and work  
22 through it with you folks and be sure you know  
23 what's happening when. Basically, this is again  
24 using their ICEP system to test what is ostensibly  
25 going to be water from MW-16 and see just how well

1 it works on taking perchlorate out.

2 ROBLES: And the waste stream.

3 BURIL: And the waste stream.

4 ROBLES: And tracing the waste stream.

5 BURIL: We also deal with the generation of the  
6 resin, the treatment of the regenerate waste and  
7 basically minimizing the amount of waste that we  
8 generate through this entire process to the greatest  
9 degree that we can through brine recycling and so  
10 forth.

11 ROBLES: See if it's engineeringly and  
12 economically feasible.

13 BURIL: There's a lot of things that are a  
14 concern with this. The waste generation is possibly  
15 the most onerous of all of the things that come  
16 along with ion exchange. We can generate dramatic  
17 amounts of waste and really have nothing to do with  
18 it once we have generated it. So this is an attempt  
19 to get a systems approach to dealing with this whole  
20 issue. A system that will not only take the water,  
21 clean it, but will clean itself and clean up the  
22 waste that it generates for itself.

23 ATWATER: It doesn't get to a zero waste stream,  
24 though?

25 BURIL: We're hopeful to get it to less than 3

1 to 5 percent total generation of waste, with a  
2 conceptual goal of less than 1 percent.

3 ATWATER: How do they treat the waste stream,  
4 the brine?

5 BURIL: Basically, it's a biological treatment.  
6 And they have the ability to knock out the sulfates,  
7 apparently, that get generated as a result of  
8 running through the ion exchange. Once it's been  
9 treated, it's capable of being recycled as regenerate  
10 again. So just get that cycle going with the basic  
11 waste being, my understanding is, the bacteria  
12 itself as it's used up and the other ions, like  
13 sulfate, that are generated throughout the process.

14 ROBLES: The difference between San Gabriel and  
15 us is that they have a low flow rate and a constant  
16 perchlorate level, whereas ours is fluctuating at  
17 all times depending on how much will be generated.  
18 So it's a whole different site --

19 ATWATER: Will the ion exchange work changing  
20 concentrations and flow rates?

21 ROBLES: Right. All they're doing there is just  
22 to see if it works, not as a feasible and economic.  
23 They're doing the whole package.

24 ATWATER: It's a real simple test. You just --  
25 constant flow, constant concentration.



1 BURIL: Theirs is a binary test. Ours is a much  
2 more complex systems --

3 ROBLES: They're not dealing with the waste  
4 treatment. That's a separate test in the future.  
5 They're just dealing -- with the concept working  
6 there.

7 ATWATER: (UNINTELLIGIBLE) with an ion exchange?

8 ROBLES: Right.

9 ATWATER: And a certain level of reduction?

10 ROBLES: Right.

11 ATWATER: What's the concentration they're doing  
12 over there? I haven't looked at the numbers.

13 BURIL: 60s.

14 ROBLES: We're doing 600 to 1200. So it's a big  
15 difference.

16 ATWATER: Okay. Good.

17 BURIL: Peter and I are planning on attending  
18 the Henderson conference on perchlorate. Is anybody  
19 else planning on going to that?

20 RIPPERDA: I'm going the second day. The second  
21 and third.

22 CUTLER: Mark Losi will probably be there.

23 BURIL: So we'll see you all there.

24 I'm looking forward to hearing about a  
25 couple of topics, one (UNINTELLIGIBLE) biological

1 treatment system (UNINTELLIGIBLE). Mike  
2 (UNINTELLIGIBLE) is going to be giving a talk on  
3 that, and Dan Rogers in his toxicological studies at  
4 Wright-Patterson Air Force Base. I'm very  
5 interested in hearing from those as well as others  
6 about what's going on.

7 ATWATER: They're supposed to be done end of the  
8 summer, if I remember right.

9 BURIL: Their goal --

10 ROBLES: Their goal was to turn it in to EPA  
11 September 1st.

12 BURIL: Their goal was that by the end of fiscal  
13 year that there would actually be a reference dose  
14 that was published for this thing.

15 ROBLES: It's very ambitious.

16 BURIL: It's an extremely ambitious goal, one  
17 which I wish them the very best of luck in.

18 CUTLER: Any indications on which way they're --

19 ROBLES: No. That's why everybody's going to  
20 the conference.

21 BURIL: Everyone is going with great  
22 anticipation to see what these guys have to say.

23 ROBLES: Like the Preakness. Will my horse come  
24 in or not.

25 BURIL: If this level suddenly takes a jump up

1 or down it's going to be some fairly dramatic  
2 impacts to a lot of people.

3 ROBLES: Going to have a lot of happy campers,  
4 or the bar is going to be open.

5 CUTLER: Major issue.

6 BURIL: Okay. I think we're pretty much down to  
7 the last bit of our meeting, where we check our  
8 action items and verify that we've covered  
9 everything that we need to cover.

10 Before I do that, is there anything that  
11 anyone else wants to bring up before I jump into the  
12 older materials?

13 RIPPERDA: I have a couple questions about the  
14 ATSDR report.

15 BURIL: Thank you. Forgot all about it. Go  
16 ahead.

17 RIPPERDA: Just reading through it, there is  
18 history in there that I don't know. One question  
19 right off the top is it says that the OU-2 RI is now  
20 in review by the regulators.

21 BURIL: That is a correction that needs to be  
22 made.

23 RIPPERDA: I just wanted to make sure that it  
24 wasn't sitting in the stack of stuff. It's like,  
25 oh, sure. But just in case James had been like --

1 no. Okay.

2 BURIL: No. In fact, I'll tell you I've got  
3 a --

4 ROBLES: Agency of Toxic Substances Disease  
5 Registry that works for the Department of Public  
6 Health. They're the ones that, by CERCLA, are an  
7 independent congressional independent health risk  
8 assessment review. They are required to do every  
9 Superfund site in the United States.

10 ATWATER: How often do they do a report like  
11 this?

12 BURIL: Once for every single site in the United  
13 States.

14 ROBLES: Once for every single Superfund site.  
15 And they're five years behind the power curve. They  
16 were supposed to do it -- the original intent, it  
17 was supposed to be done when you start your site --  
18 after you finish your site investigation and get on  
19 the NPL site. Supposed to come in there and do the  
20 risk. They're five years behind the power curve.

21 BURIL: We actually met what was then the ATSDR  
22 representative back in January of 1993, which was  
23 just after we were listed on the MpL and had signed  
24 the federal facilities agreement for JPL. And they  
25 told us "We'll be coming."

1 ROBLES: "Don't call us. We'll call you."

2 BURIL: "We'll be coming. Just be ready when we  
3 show up." They showed up last year.

4 ATWATER: So this (UNINTELLIGIBLE) report is  
5 about a year in preparation?

6 ROBLES: Yes.

7 BURIL: Approximately a year in preparation,  
8 right.

9 RIPPERDA: The good thing about them being so  
10 far behind is they actually get data.

11 ROBLES: Real data, which is a good thing,  
12 really.

13 RIPPERDA: A couple other questions about that.

14 BURIL: Sure.

15 RIPPERDA: They say, luckily for you guys,  
16 they've minimized the risk greatly because no  
17 pathway, wells getting shut in.

18 But one of their points about the no  
19 pathway was that the stuff was discovered in 1980.  
20 Well, the TCE was discovered in 1980 and subsequent  
21 to that any time it went above MCLs those wells will  
22 be shut in or blended so that there were no  
23 receptors for TCE above MCLs. But what about before  
24 1980?

25 BURIL: My understanding is that because of the

1 lack of information that they were able to get  
2 regarding constituents, concentrations in those  
3 previous time frames, that they would not speculate.  
4 They don't know whether it was there. They don't  
5 know whether it wasn't.

6 ROBLES: Plus the State action levels were  
7 higher, and in '80 I believe they changed.

8 NOVELLY: That was the problem because the  
9 action levels were lower. They were monitoring it  
10 before.

11 ROBLES: Different before then. So therefore,  
12 they couldn't make a summation and they felt that  
13 there wasn't an issue and that they dealt with it.

14 BURIL: Anything they would have generated in  
15 terms of past exposure would have been conjecture,  
16 which was something they wanted to avoid.

17 RIPPERDA: The other thing it pointed out that I  
18 noticed was the effects of vapors in buildings. It  
19 mentioned one building in particular and said --

20 BURIL: Building 107.

21 RIPPERDA: Yes.

22 BURIL: We're actually going to go ahead with an  
23 industrial hygiene evaluation of that building.  
24 It's going to focus down in the basement. And we're  
25 going to be looking for the volatile constituents

1 that we have as a concern just to address that  
2 particular issue.

3 RIPPERDA: Where is 107?

4 RANDOLPH: It's right by the east gate. It's  
5 the first building on the right as you come in the  
6 east gate.

7 BURIL: See it there? It's kind of a squarish  
8 building.

9 RANDOLPH: Out in front of that building is  
10 where that catch basin was that's listed and  
11 described in the workplan and FSAP.

12 RIPPERDA: Is there any potential for TCE or  
13 carbon tet vapors anywhere around your soil -- your  
14 SVE test? Like since that's where you have high  
15 soil gases.

16 BURIL: Most of the soil gases that we're  
17 finding at those locations are 70, 80 feet below  
18 grade.

19 RIPPERDA: So the shallower was relatively  
20 clean.

21 BURIL: It was totally clean with the exception  
22 of (UNINTELLIGIBLE) --

23 RANDOLPH: I believe it's only there because  
24 they spread the contents or the sediments that were  
25 in that catch basin around, and it was extremely

1 high levels of carbon tet and other items in that  
2 material, and I think it was spread around in the  
3 surface soil and it wasn't totally cleaned up. And  
4 they cleaned up a couple hundred yards, but I don't  
5 think they got it all. I believe that's the only  
6 reason you're finding it there.

7 BURIL: That's a real possibility.

8 Mark, just to let me give you a little  
9 history on it, without wanting to rattle skeletons  
10 in the closet, basically what happened is that  
11 through a facilities action, construction action  
12 here on the Lab, we came across this old storm  
13 drain. It was basically removed and it was  
14 recognized that the soil was contaminated.

15 Well, before what was then the  
16 Environmental Office, predated my own tenure here at  
17 the Lab, before the Environmental Office knew about  
18 it, the contractor had taken the material and spread  
19 it across the ground in an effort to aerate it. And  
20 then when the Environmental Office found out about  
21 it, they gathered it all back up and disposed of it  
22 properly, which is where I think B.G. is coming  
23 from, the idea that some of that might have actually  
24 been left behind.

25 RIPPERDA: Okay. That was all I noticed in the



1 ATSDR that I had questions on.

2 BURIL: I caught the same thing about the RI. I  
3 was going to give B.G. hell about it, but --

4 ROBLES: The ATSDR report is up at NASA  
5 headquarters and they will make comments on it as  
6 well. It's also at the Cal Tech general counsel,  
7 and they're making comments.

8 RANDOLPH: I plan on going through it with a red  
9 pen from the OU-2 portion of it and sending you a  
10 copy.

11 BURIL: All of you who would like to make  
12 comments, certainly you're free to do so on your  
13 own. If you would like them incorporated with JPL's  
14 comments, because we are going to make ones like the  
15 RI report of, no, it's not in the regulator's hands,  
16 I would like you to get me your comments by the 20th  
17 of May. That's when I'm asking everybody here at  
18 JPL and Foster Wheeler now, but B.G. has indicated a  
19 desire to give comments.

20 ROBLES: You have to get it them.

21 BURIL: I have to have it to them by the 29th of  
22 May or they assume no comment.

23 GEBERT: You were going to send us a copy.

24 BURIL: You should already have that on the way.  
25 If you don't see it by Friday, call us --

1 CARLOS: I haven't seen it.

2 BURIL: -- and we will FedEx you a copy, because  
3 that should have gone out.

4 RIPPERDA: But if any of us have comments --  
5 and, in fact, the Raymond Basin also got a copy, I'm  
6 told.

7 BURIL: If you want to submit your own comments,  
8 please do.

9 ATWATER: I'll talk to Ron, but I don't see any  
10 reason why we can't get them to you on the 20th so  
11 you can have them.

12 BURIL: That would be the ideal. I didn't see  
13 anything in there that struck me as being  
14 technically erroneous, so I don't anticipate a great  
15 number of comments on our part.

16 RANDOLPH: Primarily I was just going to go  
17 through that table and make corrections that were  
18 pretty blatant to me, false reporting of some of the  
19 results.

20 RIPPERDA: I've never seen an ATSDR report that  
21 has such a strongly worded editorial comment, no  
22 apparent risk.

23 BURIL: I hadn't either.

24 ROBLES: I have never seen one in my life. I  
25 almost fell out of my chair. That's the first

1 thing. And I'm going, you know, because they were  
2 very concerned about how they were going to treat  
3 this site. It was very sensitive.

4 But they had done public comments. They  
5 went out there and got public comments. They  
6 supposedly went to the purveyors of water and they  
7 went to the local community and they got the folks  
8 that are suing us and everything else. And they  
9 looked at all the issues. And that's what kind of  
10 shocked me.

11 So from one sense is they have come up --  
12 they did a very good interview. It's the best  
13 interview program that I've ever seen, the best  
14 protocol, that ATSDR has ever done. And they did  
15 put it in the papers and they did ask the people to  
16 come out and there wasn't a lot of folks that were  
17 concerned. And they were really concerned that they  
18 were going to walk into a hornet's nest in what they  
19 found. They sat down and wrote this thing. It was  
20 amazing to me.

21 RIPPERDA: It will be fun when the public  
22 comment document comes out. Because this is a like  
23 a draft for --

24 ROBLES: Right. Internal to the RPM.

25 RIPPERDA: -- public comment.

1 ROBLES: When it goes out to the public comment,  
2 that's going to be very, very, very interesting.

3 BURIL: I'll be taking a vacation.

4 ATWATER: The other only other question I had,  
5 separate from, if we're done with that, is this new  
6 chemical, NDMA. Is there anything that you're going  
7 to do?

8 BURIL: N-nitrodimethylamine, I think it is  
9 nitrate. NDMA.

10 ROBLES: You better spell it for her.

11 BURIL: I'll get it back to you, Louise.

12 ROBLES: What's the name?

13 BURIL: Acronym?

14 ROBLES: Acronym.

15 BURIL: NDMA.

16 ATWATER: That's a lot easier to deal with.

17 BURIL: Basically, we have gone ahead and  
18 established a subcontract through our own laboratory  
19 to have that analyzed. What lab is it, Mark? I  
20 can't recall.

21 CUTLER: It's Pacific Analytical.

22 BURIL: And they got it down to the, correct me  
23 if I'm wrong, 10 parts per trillion level, if I  
24 remember right.

25 CUTLER: Right. Their actual detection limits

1 is 33 parts per trillion.

2 BURIL: That's right.

3 CUTLER: But in their calibration they do spike  
4 down to 10 parts per trillion and anything between  
5 10 and 33 they will report as a trace. They can  
6 positively identify it, but they can't verify the  
7 number.

8 ROBLES: Trillion.

9 BURIL: Trillion, with a "T."

10 ROBLES: What's the actual for this?

11 BURIL: Nondetect.

12 CUTLER: So we searched high and low for labs  
13 that are pretty good about this one.

14 ROBLES: Wait a minute. What happens if they  
15 make a mistake in reading fingerprints?

16 ATWATER: Yeah, false positives.

17 BURIL: Then we do it again.

18 ATWATER: Split samples, go to another lab. All  
19 that sort of stuff.

20 BURIL: We aren't splitting samples of this  
21 particular --

22 ROBLES: What type of compound is this?

23 ATWATER: Usually the first round just to see if  
24 you got any of that.

25 BURIL: This is a stabilizer used in solvents.

1 No. Wait. That's one --

2 ATWATER: This is liquid (UNINTELLIGIBLE)

3 BURIL: This is the other thing that was  
4 associated with rocket fuel.

5 ROBLES: Right. That's what I think it is.

6 BURIL: The dioxin was the one that was the  
7 stabilizer in the solvents.

8 CUTLER: Both of those, we're taking six samples  
9 from the six more contaminated screens on site.  
10 That will be from the same screens, one for dioxin  
11 and NDMA. That's being done this week. And the  
12 turn-around time is a little bit longer for that.  
13 Three or four weeks.

14 ROBLES: So for planning we got something new to  
15 deal with.

16 ATWATER: Just so you know, DHS, you know, told  
17 all the producers about it but has recommended not  
18 to do any sampling. So we're not going to have any  
19 data for (UNINTELLIGIBLE) water wells.

20 BURIL: We're being proactive in this regard  
21 simply because we are at a crossroads in the project  
22 and remedial action.

23 ROBLES: We need to know.

24 BURIL: We need to know.

25 ATWATER: I think it's smart. But just so you

1 know, DHS isn't suggesting, nobody's --

2 BURIL: Nobody is jumping up and down about this  
3 one yet.

4 ATWATER: No. And nobody has taken any samples.  
5 So going through this one --

6 BURIL: Well, we'll find out.

7 ATWATER: Yes. We'll let you know if we hear  
8 anything different.

9 ROBLES: Does anybody know anything about  
10 destructive methods for perchlorate?

11 BURIL: "Destructive" meaning?

12 ROBLES: Technology, destructive to -- for  
13 remediation.

14 BURIL: The only destructive ones that I've  
15 heard of are oxidation techniques, and that's about  
16 it. There's not much else. Oxidation through a  
17 variety of means.

18 ROBLES: I have looked and I haven't found  
19 anybody who is doing it.

20 BURIL: Well, you're going to have a hard time  
21 finding anyone who takes the time, because  
22 perchlorate is the most stable form out there of  
23 chlorine ion.

24 HOSANGADI: (UNINTELLIGIBLE) boiling glucose.  
25 Still nothing.

1       ATWATER: You should hear about all that in  
2 Henderson. And again, we can get, you know,  
3 (UNINTELLIGIBLE) kind of get along with that  
4 (UNINTELLIGIBLE) research that comes from Jerry  
5 Lewis (UNINTELLIGIBLE) they haven't made any  
6 progress on that, but they really prioritized all  
7 the treatment options available. But like Chuck, I  
8 don't think I know of anything else.

9       BURIL: That's going to be hard. You're going  
10 to be hard pressed. This thing is the pillbox of  
11 ions. You got to really hit it with something to  
12 make it really do something. Whatever you hit it  
13 with is probably worse than the perchlorate itself.  
14 Okay.

15               Well, let's go ahead, then. Are there any  
16 other things outside of the action items that anyone  
17 wants to bring up?

18       RIPPERDA: I got one last thing.

19       BURIL: Oh, okay. Go ahead, Mark.

20       RIPPERDA: This is the same lawyer that's  
21 representing the people that are suing you, and  
22 they're looking for information. They said they had  
23 two problems with the repository, that the latest  
24 quarterly monitoring report they couldn't find at  
25 the library they went to, so they wanted to get it



1 from me. And I told them that they should check the  
2 repository again.

3 BURIL: Let's take an action to do a sweep of  
4 all the repositories, because things disappear from  
5 those things, unfortunately.

6 NOVELLY: Do you know when they looked? Because  
7 we just sent out the latest one not too long ago.

8 RIPPERDA: I think it was within the last month.  
9 So it may have -- I told them to look again.

10 ROBLES: It may be gone again.

11 BURIL: We have had problems off and on over the  
12 course of time when people have taken things from  
13 the repositories. Generally when we add something  
14 to it we take a list and kind of check to be sure  
15 everything is there. We can do that again. If it's  
16 not there, we'll sweep them all and make sure that  
17 it's there.

18 RIPPERDA: What are the public libraries that  
19 you use?

20 BURIL: Pasadena.

21 NOVELLY: Altadena.

22 BURIL: Altadena.

23 NOVELLY: La Canada.

24 BURIL: La Canada.

25 NOVELLY: We have one here at JPL that the

1 public can have access to.

2 RIPPERDA: So the first question was they  
3 couldn't find the latest monitoring.

4 And the second question was the library  
5 that they were going to, I guess it would have been  
6 La Canada, the library wouldn't let them come in  
7 with a copy service and lawyers come in and set up  
8 their own copy machine.

9 BURIL: That's the library's issue.

10 RIPPERDA: Right. But can they do that here?

11 BURIL: They would have to coordinate with our  
12 office of general counsel.

13 RIPPERDA: I told them to ask at the library.  
14 They didn't know which of the libraries. I'll tell  
15 them Pasadena and Altadena.

16 NOVELLY: They're all listed on the back of  
17 every fact sheet, too, if they have copies of those.  
18 It's right on the back.

19 RIPPERDA: Okay.

20 BURIL: Anything they would want specifically  
21 from JPL they would have to work through our office  
22 of general counsel.

23 RIPPERDA: Okay. That's it.

24 BURIL: Is that it? Okay.

25 Let me knock down the list of action items

1 here and we'll be done.

2           There was a request for some information  
3 regarding a radiation license and such for JPL. Did  
4 we get that information from James and what he was  
5 looking for, and a contact name?

6           NOVELLY: Yes. And I gave it to Fred.

7           BURIL: Do we know if he's dealt with them?

8           NOVELLY: I haven't seen anything come back.  
9 And he's out now on medical.

10          BURIL: Mark, I guess the best thing I could ask  
11 you to do, this was apparently a request from James  
12 prior to your taking over, it was with regard to  
13 what kind of radiation things we do here and some  
14 questions that I guess some of the folks who deal in  
15 the radiation area of EPA were asking. We agreed to  
16 get the information.

17               The fellow who would have done it, though,  
18 has had a knee replacement and he is out until  
19 August, is my understanding. And if you could find  
20 out what that request was from your end and see  
21 whether we've answered the mail or not.  
22 Unfortunately, we can't get hold of this fellow  
23 while he's on medical leave. So if you could find  
24 out if we actually did provide the information that  
25 was necessary and let us know, and then we can

1 pursue it again, if necessary.

2 RIPPERDA: Do you know?

3 NIOU: This is by your radiation people  
4 requesting if JPL has any radioactive things stored.

5 RIPPERDA: Do you know if they responded?

6 NOVELLY: I know that he talked to your  
7 representative on the phone. I didn't see anything  
8 printed come out.

9 RIPPERDA: We only have one radiation guy, so  
10 I'll talk to him.

11 NOVELLY: He was talking to a woman.

12 RIPPERDA: I'll have to look into it.

13 BURIL: Okay. Alex, do you know if we got the  
14 problem with the State reimbursement taken care of?  
15 There was a problem that was identified, I think it  
16 was by you. It says the State.

17 CARLOS: I think that was before I took --

18 GEBERT: That was me.

19 BURIL: Was that you?

20 GEBERT: Yes.

21 BURIL: Has it been taken care of, that you know  
22 of?

23 GEBERT: Yes.

24 BURIL: So we'll take that as no problem.

25 NOVELLY: Her name was Perianne Wood. And her

1 number is (415) 744-1131.

2 RIPPERDA: Okay.

3 BURIL: That looks like that was it.

4 We were going to have this meeting in

5 Frisco.

6 ROBLES: Sunny Frisco.

7 BURIL: I don't know which would have been

8 worse, here or in Frisco.

9 RIPPERDA: It's exactly the same.

10 BURIL: Okay.

11 RIPPERDA: Just colder and windier in San

12 Francisco.

13 ATWATER: It's not wetter, though, after the

14 last two days.

15 BURIL: But you have Fisherman's Wharf there.

16 ATWATER: Excuse me. I've got to run to a lunch

17 meeting.

18 We're basically done?

19 BURIL: We are basically done, with the

20 exception of setting our next meeting.

21 NOVELLY: Before you go, Richard, I just want to

22 make sure, you're going to get us some chemical data

23 from production wells, some pumping data and a full

24 set of --

25 ATWATER: I think --

1       NOVELLY: (UNINTELLIGIBLE) everything you can.

2       ATWATER: -- the copies has all the historic  
3 production data --

4       BURIL: Some of that we already have.

5       ATWATER: -- for the summer except for the  
6 Pasadena Arroyo well.

7               Like you and I talked, Chuck, I need to  
8 talk to City of Pasadena, ask what they do with Well  
9 52. But all the other wells, Lincoln, Valley, Las  
10 Flores, La Canada Irrigation, the pumping pattern  
11 you have for the last summer and the summer before,  
12 put all those --

13       BURIL: Probably they should be the same.

14       ATWATER: Yeah. May 1 through end of September.  
15 That's done.

16               On the water quality data, I'll -- I'm  
17 going to grab Mark. If we can get over in Ron's  
18 office and we'll just make sure and get you all of  
19 the historic water quality and find out why -- I  
20 don't understand why you can't get from DHS all the  
21 electronic stuff. But we'll try and get it to you  
22 electronically.

23       BURIL: It is a painful process.

24       ATWATER: I know Ron has in his file all the  
25 paper files, which is -- getting it electronically

1 would be a lot easier to deal with.

2 BURIL: When you get that coordinated, if you'd  
3 work through me to get it to JPL and we can  
4 disseminate it from there. That would be perfect.

5 ATWATER: Sure. That's no problem. It's all  
6 there. It's all public information. There's no  
7 reason why you shouldn't have it.

8 BURIL: Great.

9 CARLOS: One more question, Chuck. Next Monday  
10 will be the first sampling event for the new deep  
11 vapor wells.

12 RANDOLPH: Correct.

13 CARLOS: Is that going to be on-site lab  
14 analyses?

15 RANDOLPH: Oh, yes. Definitely. It will be the  
16 same lab we had last time.

17 CARLOS: Which lab?

18 RANDOLPH: It's the Winnebago. I don't remember  
19 the lab number. DEG. The same chemist.

20 ATWATER: I'll coordinate with you, Chuck, on  
21 getting all the April-May production well data so  
22 you can include that in the quarterly report.

23 BURIL: Beautiful.

24 ATWATER: And you want all that, what, by the  
25 first or second week of June, so --

1 BURIL: No later than, so we can be sure to  
2 incorporate it without having to reproduce.

3 ATWATER: Exactly.

4 BURIL: That sounds great, Richard. Thanks.

5 ATWATER: Thank you. You're going to pick a  
6 date?

7 BURIL: We're going to pick a date right now as  
8 far as the next RPM meeting. We're looking into the  
9 month of July, everybody. Is that a frightening  
10 thought, or what.

11 ROBLES: 15th?

12 BURIL: The first week of July is out.  
13 Actually, JPL, I believe, is closed on the 6th or  
14 the 3rd. I can't remember which.

15 NOVELLY: 3rd.

16 BURIL: Is it the 3rd?

17 ATWATER: Yes. It's the 4th of July.

18 CARLOS: 15th sounds good to me.

19 BURIL: 15th. Okay. I'll just have to change  
20 my quiet time with my boss. Let's go ahead and set  
21 it for the 15th. 10:00 A.M. still work for  
22 everybody all right?

23 Location. Here?

24 ROBLES: Same place, same time.

25 BURIL: Okay.



1 CUTLER: Can I clarify one thing? We were going  
2 back and forth about two volumes on the quarterly  
3 reports. It sounded like there is only one  
4 (UNINTELLIGIBLE) --

5 RIPPERDA: Whatever is easiest for you. If  
6 you're used to producing it this way, then just keep  
7 producing it this way. Just keep doing what you're  
8 doing.

9 BURIL: All right. Let's just do that.

10 CUTLER: I wasn't clear.

11 BURIL: Sorry for the extra paper. These two  
12 folks needing the whole thing, it would be easier  
13 for us. Okay. Thank you. Appreciate that.

14 NOVELLY: Can I go over the other action items?  
15 We have the things coming from Richard  
16 Atwater.

17 We're considering the comments closed on  
18 addendums to OU-2, so we can proceed with finalizing  
19 those documents.

20 Chuck is requesting comments on the ATSDR  
21 report to him by May 20th.

22 BURIL: Only if you wish to comment by  
23 incorporation with JPL's comments.

24 NOVELLY: I'll check and see what happened to  
25 Richard and Alex's copies of the ATSDR report.

1           We're going to go out and check the  
2       repositories for completeness.

3           And Mark Ripperda is going to check with  
4       Perianne Wood to see she has her questions on  
5       radiation answered.

6           That's it.

7       BURIL: Okay. Great. I think that covers  
8       everything. Is there anything else, anybody? That  
9       will do it.

10           Thank you all very much. Appreciate your  
11       coming down on an abysmal day. We'll see you next  
12       time.

13           (The proceedings adjourned at 12:40 P.M.)

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